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Nottingham University Business School

Relationship between key economic indicator, (GDP) and ISO certification take up in selected developing economies

By

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ABSTRACT

In an economic environment characterised in recent years by globalization and the integration of economic processes, standardization in Quality Managements Systems has had a high growth. In this context, there has been a remarkable increase in the number of certifications issued by International organizations especially to countries known and defined as "developing". Amongst these standards, one stands out which is issued by the International Organization for standardization (ISO), this is known as the family of ISO 9000 standards**.**
The ISO 9001 series has seen an increase in the number of certification obtained by developing countries. This adoption, gives developing countries the opportunity to compete in global market place as being ISO 9000 certified is seen as an entry qualifier into the global market place.

The purpose of this study is to observe and analyze the relationship between the economies of selected developing countries and ISO take up in the selected countries (Nigeria, Kenya, Egypt, Mexico and China), with the aim of finding a possible relationship between these country's economic development and its ISO 9001 certification status. Having this in mind, the research employs the use of primarily quantitative techniques with some qualitative elements in order to achieve its objectives.
Particularly, a linear regression analysis is run using the data collected by using Pearson's technique for calculating the correlation coefficient (r) and (r^2) using Microsoft excel. This particular technique for calculating correlation coefficient was chosen because it is more suitable to measure the strength and the direction of a linear relationship between two variables when ratio-typed data are used.

From this study, it has been discovered that there is a linear and strong correlation between ISO certification take up in the selected developing countries across continents and their GDP which signifies the level of economic growth of countries.Moreso, it also found out that the main reason why developing countries get ISO 9000 certificates is because of customer pressure and the also the ability to compete in the global market.

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To my darling husband, Eseoghenene Owede.Thank you so much for believing in me. I love you so much.

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CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 General overview

In an economic environment characterised in recent years by globalization and the integration of economic processes, standardization in Quality Managements Systems has had a high growth. In this context, there has been a remarkable increase in the number of certifications issued by International organizations especially to countries known and defined as "developing". Amongst these standards, one stands out which is issued by the International Organization for standardization (ISO), this is known as the family of ISO 9000 standards**.**

According to ISO website write up," Giving fish" is one way of assisting developing countries. By implementing International standards and participating in their development, developing countries learn to fish for themselves. This simply implies that in the face of globalisation, developing countries have the opportunity to compete in the global market place if they adopt the ISO 9001 series as it is regarded now as the entry qualifier into the global market place.

1.2 Research Objectives

The aim/objective of this dissertation is to observe and analyze the relationship between the economy of selected developing countries and ISO take up in the selected countries, with the aim of finding a possible relationship between a country's economic development and its ISO 9001 certification status.

In particular, it seeks to establish and observe how the take up of a Quality Management system such as ISO 9001 series is related to the economy of the developing countries compared with standard economic indicators such as GDP. It also seeks to benchmark the trend of ISO take up in these three developing countries that is Nigeria, Kenya and Egypt to its corresponding developing countries in other continents namely Mexico and China which were chosen because of their relative size of economies and it's level of ISO take up amongst developing countries.

It will finally look at the pros and cons of ISO certification take up to developing economies in terms of advantages and cost.

1.3 Research methodology

In the process of my research, the research method used is primarily quantitative in nature, with some qualitative elements for explanation.
In order to achieve the objective of this research, an exhaustive literature review of ISO 9000 studies has been carried out. For this purpose, articles were analysed, which were sorted in the following categories, according to the used methodology: surveys; analysis of financial indicators; case studies; interviews; literature review; and statistical data analysis.
Qualitative includes past literature review by both native and foreign quality management authorities which may be in form of books, newspapers, presentations and journals .This qualitative method is to give a general overview of ISO development,criteria,advantages and disadvantages in the context of developing countries and the cultural issues of ISO take up in developing economies.

Quantitative methods such as the use of statistical tools i.e. excel was used for regression to get the co-efficient of correlation which shows the level of relationship between the dependent and the independent variable. Also, tables/scatter diagrams and graphs were used to show the trend and conduct a time series analysis for a period of 10years for ISO intensity in the five countries studied.

The quantitative tool that was decided as the most appropriate for the present study basically consist of using the Pearson's technique for calculating the correlation coefficient (r) and (r^2) using Microsoft excel .This particular technique for calculating correlation coefficient was chosen because it is more suitable to measure the strength and the direction of a linear relationship between two variables when ratio-typed data are used.

The main result of a correlation is called the **correlation coefficient** (or "r"). It ranges from -1.0 to +1.0. The closer r is to +1 or -1, the more closely the two variables are related. If r is close to 0, it means there is no relationship between the variables. If r is positive, it means that as one variable gets larger the other gets larger. If r is negative it means that as one gets larger, the other gets smaller (often called an "inverse" correlation).

Also, a coefficient of determination was calculated. This was done by squaring "r", which makes them easier to understand. The coefficient of determination (r-squared) is the square of the correlation coefficient and its value may vary from zero to one. It has the advantage over the correlation coefficient in that it may be interpreted directly as the proportion of variance in the dependent variable that can be accounted for by the regression equation. For example, an r-squared value of .49 means that 49% of the variance in the dependent variable can be explained by the regression equation. The other 51% is unexplained.

1.3.1 Data Collection

The data used in the research was obtained from relevant literatures, WebPages such as the United Nations website, ISO website, UNESCO, Country specific websites and previous journals and articles that may be relevant. Of particular interest will be data obtained from ISO webpage and UN websites as I believe they provide robust and best verified result s and also contains less or no errors.

1.4 The development of Quality Managements standards (*ISO 9000series overview)*

Quality Management Systems are defined in ISO 9000 series as "the organisation structure, responsibilities, procedures, processes and resources for implementing quality management".

Quality systems standards are based on accepted, rational, Scientific Management principles such as the assignment of individual activities, the maintenance of records and the development of effective administrative

procedures. Manufacturing and service organizations must implement a quality system according to the requirement of the appropriate standard to receive recognition and be certified or register to the standard.

Quality Management System is referred to as a business management system that can be applied to all business sectors and all sizes of companies. If you think of a business as a set of processes it identifies the key process areas that need to be addressed to ensure quality is managed effectively. Moreover, quality management systems are designed to provide the support and mechanism for the effective accomplishment of quality-related activities in organizations. It is recognized as a systematic means to manage quality in organizations (Kolka, 2002). In broader sense, Goetsch and Davis (2005, p. 174) indicated that the quality management system "consists of all the organization's policies, procedures, plans, resources, processes, and delineation of responsibility and authority, all deliberately aimed at achieving product or service quality levels consistent with customer satisfaction and the organization's objectives. When these policies, procedures, plans, etc. are taken together, they define how the organization works, and how quality is managed." An example of quality management system is the well known ISO 9001:2000.

Amongst others, Tsekouras et al. (2002) suggest that a company's effort can be strengthened through applying QS 9000, the European commitment to excellence award (EFQM), the Malcolm Baldbridge award in the USA and the Deming price in Japan. Nevertheless, the most prestigious and widely implemented quality management standards is said to be the ISO 9000 series of certificates. The contribution of ISO 9000 to business excellence has been extensively discussed in the quality literature (Van der Wiele et al., 2000: Boutler and Bendel, 2002; Bendell, 2000; Magd and Curry, 2003).

The world-wide introduction of quality systems standards is one of the most successful efforts at international standardisation resulting from globalisation. Current national and international quality systems standards have developed from those introduced in the 1950s by the US armed forces in order to ensure

that defence suppliers adopted an effective system for the management of product quality assurance.

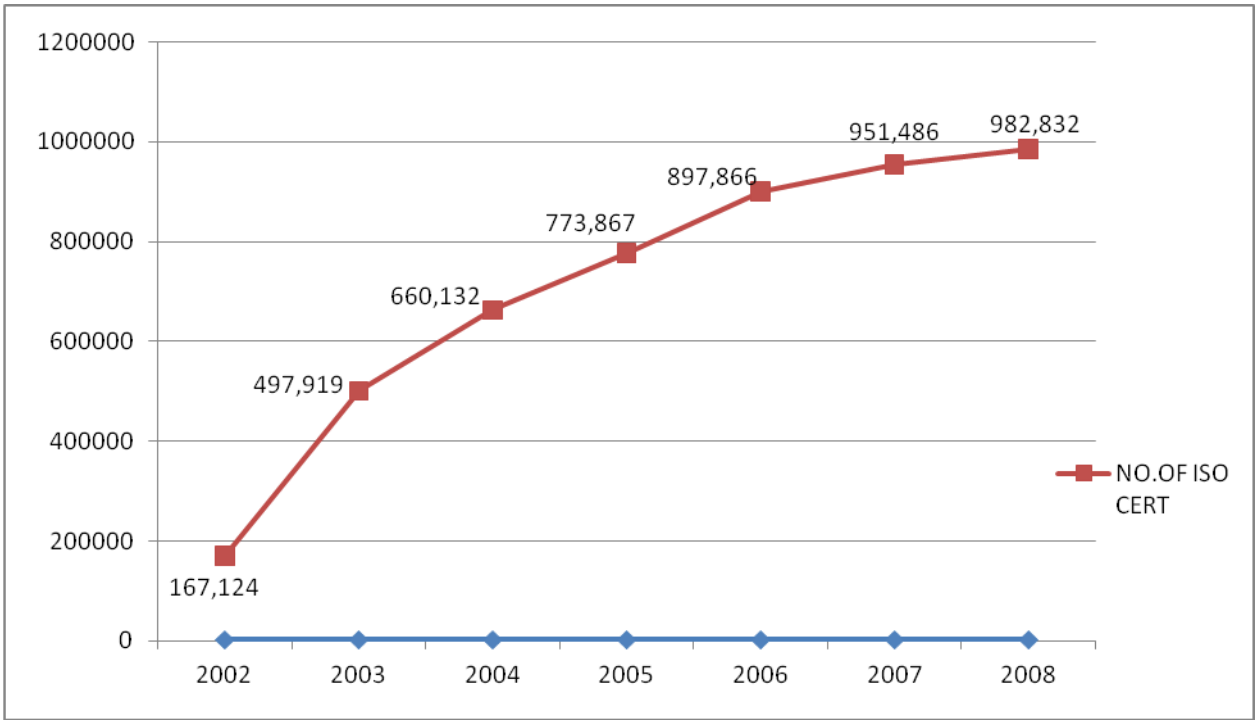
All industrialised and most developing countries now have civil quality systems standards, issued by a national standardisation body. The growth in companies which are certified to have a quality system according to their national quality systems standard has been remarkable. All these national standards are compatible with, and are largely identical to, the ISO 9000 series. Hence a company in the UK can readily accept that a supplier in Nigeria has an acceptable quality assurance system, without the need to perform a quality audit on that company by themselves. This has greatly facilitated global trade.

In 1987, the International Organisation for Standardisation (ISO) (http://www.iso.ch/), after consultation with national standardisation bodies, introduced the ISO standards 9000, 9001, 9002, 9003 and 9004.In 2000 revised versions of the ISO 9000 standards appeared which are still in use by many companies. ***A new version of the standard with more significant changes was issued in late 2008, which should be adopted world-wide by all certified companies during the period up to 2010.***

The ISO 9000 series no doubt is the most successful global Quality management System ever has backed up by the rapid rate at which is been taken up by organizations in different countries all over the world. For example, in 2002, the number of organization certified was 167,124 which in the year 2008 has risen tremendously to 982,832 according to the ISO certification survey statistics for 2008

The importance of effective accreditation in developing and newly industrialised countries cannot be over-emphasized. This is because ISO 9001 certification is nowadays a qualifier to entry to lucrative global markets. As stated by Tannock. (2010),"countries must have regulation of certification bodies, to avoid abuses and corruption (such as purchase of certificates, which was rife in India in the 1990s)".

Figure 1: Number of organizations certified ISO 9001



YEAR	2002	2003	2004	2005	2006	2007	2008
NO.OF ISO CERT	167,124	497,919	660,132	773,867	897,866	951,486	982,832

Source: ISO Certification Survey 2001-2008

1.5 Developing country overview

Developing country is a term generally used to describe a nation with a low level of material well-being (not to be confused with third world countries) .Countries with more advanced economies than other developing nations, but which have not yet fully demonstrated the signs of a developed country, are categorized under the term *newly industrialized countries*

Developing countries are in general countries which have not achieved a significant degree of industrialization relative to their populations, and which have, in most cases a medium to low standard of living. There is a strong correlation between low income and high population growth

The development of a country is measured with statistical indexes such as income per capita (per person) (GDP), life expectancy, the rate of literacy, et cetera. The UN has developed the HDI, a compound indicator of the above statistics, to gauge the level of human development for countries where data is available.

The following are considered emerging and developing economies according to the International Monetary Fund's World Economic Outlook Report, October 2009: Nigeria, Mexico, China, Brazil, Egypt, Tanzania, Pakistan, Egypt, Argentina etc

The benefit of ISO 9000 series in developing economies in terms of standardization cannot be overemphasized. According to United Nations, since developing countries have scarce resources, there is need for them to invest them wisely. Making wrong choices may have serious economic and social consequences to such economies.

If there is no standardization in place, the effort to export local product comes to nothing because they do not meet the regulations/criteria for foreign market. Also, imported technology turns out to be unsuitable for local conditions and therefore drains investment in an investment development program which in turn affects the GDP and other economic indices of developing economies.

1.6 Reason for selecting this topic

The importance of applying ISO 9001 series has been increasing over the past few years, not only in the developed economies but also in the developing countries all around sub-Saharan Africa, This is evident by the increase in the number of certifications by developing economies in Africa. As earlier discussed that the ISO 9001 series is been regarded as the entry qualifier into the global market place to trade, for the developing country, the added cost to certify and then maintain certification may not be justified if product end user countries do not require or derive the full advantages ISO 9000.Hence the need to observe and establish the degree of relationship, if any , between this QMS and the

economy of the selected developing countries by using an economic indicator such as GDP as a measuring index.

Current literatures although few, focus on the advantages of ISO take up to developing economies on a macro level but there are no current literatures that looks at the level of relationship between ISO certification take up and selected economic indicators regarding Africa so as to determine if getting certified has a major impact on the economy by using economic indicators such as GDP and Export as a measuring device. This dissertation seeks to provide such information.

1.7 Users of Dissertation findings

At the end of the study, the findings of this dissertation will be useful to the following:

Government of the selected country- the information provided about the relationship between ISO 9000 series and economic indicators of the selected countries will help in the formation of public policies. Arms of government such as chambers of commerce and departments involved in economic policy formations can use the statistical ratios that will be offered, for international comparism i.e. benchmarking against other countries and to provide the necessary assistance to encourage more certifications if needed.

Prospective international investors-Companies wishing to conduct international operations from the selected developing countries been observed will also benefit from the findings of this dissertation. Insight will be gained on the importance of a worldwide Quality Management system such as ISO9001certification, the advantages to businesses and how to get certified

Academics-Scholars and academic who wish to study more about the ISO 9000 series and developing countries will find the dissertation helpful in terms of understanding relationships between some economic indicators and ISO

certification take up of the selected countries by way of using the data that is collected and analyzed.

Developers of related standards-I believe the findings of this dissertation will be useful to competitors to ISO 9000 series who also develop related standards. The statistical data and the fashion trend of ISO take up in the studied countries will help them project and understand how companies in these countries would react to related standards.

1.8 Dissertation structure

Chapter 1 contains brief introduction and background to the dissertation topic (Relationship between key economic indicators and ISO certification take up in selected developing economies).In addition, it gives an overview of the definition of developing countries and a historical review for the development of Quality Management Systems is presented where the ISO 9000 series of standards is identified as the most helpful and widely implemented standard.

In this chapter, the research methodology which is primarily quantitative is described. A statistical software package was used to perform a regression so as to show the relationship between the economic indicators and number of ISO certifications. Also, tables/scatter diagrams and graphs was used to show the trend and conduct a time series analysis for a period of 10years for ISO intensity in the five countries studied.

Chapter 2 is the literature review. This has to do with an in depth analysis of the ISO 9000 certification and covers all aspects including a brief overview, reasons for seeking ISO certification, benefits and cons to developing economies.

Chapter 3 gives an introduction into the political history, background and the economies of Nigeria, Kenya , Egypt, Mexico and China.Finally,the trend of ISO 9001 take up in the counties listed above will be shown and the economic indicator i.e. GDP data will be introduced. Mexico and China will then be used for comparism with the above listed African countries.

Chapter 4 is the analysis, results and discussion section which involves the process of analyzing the collected data and discussing the findings. Results will be analysed in both qualitative and quantitative terms for better understanding.

Finally, chapter 5 provides conclusions and recommendations to the prospective users of this dissertation finding. This is then followed by the References section and the Appendix.

CHAPTER 2: LITERATURE REVIEW

This chapter deals with an in-depth analysis of ISO 9000 including an overview, principles and implementation process, reasons for seeking ISO certification, benefits and cons to developing economies. However, since the most viable certificate today is the revised version 2008 as other users of version 2000 are in the process of updating, this chapter will provide discussion of post 2000 versions as all versions before this period will be considered outdated, hence not discussed.

2.1 Historical overview of ISO 9000

The history behind the ISO 9001 of standard can be traced to the USA - during World War II. From the USA, the concept of quality assurance spread to Europe via NATO where it evolved into the Allied Quality Assurance Publication (AQAP). This series of documents discussed everything from production efficiency to selection of suppliers. The AQAP series were adopted by the UK Ministry of Defence for the British Armed Forces. This series had a trickledown effect as organizations began to require quality assurance programs from their suppliers. The problem was that there was much diversity in the requirements for different organizations. The diversity issue was addressed by the British Standard BS 5750 which was based on the AQAP series and was introduced in 1979. The BS 5750 standard was considered so effective that it was adopted almost without change by ISO in 1987 as ISO 9000.

ISO 9000 comprises of a series of international standards and supplementary guidelines on quality management and quality assurance. Typically, an ISO 9001 certificate proclaims to the world that an organization has a standard procedure for every part of its business. In a broader sense, the basic task of ISO 9000 series is to ensure that product and services are designed, created and delivered in conformance to certain standards and specifications (Buttle, 1997).According to (Anderson et al., 1999),”ISO 9000 standards are management tools based on

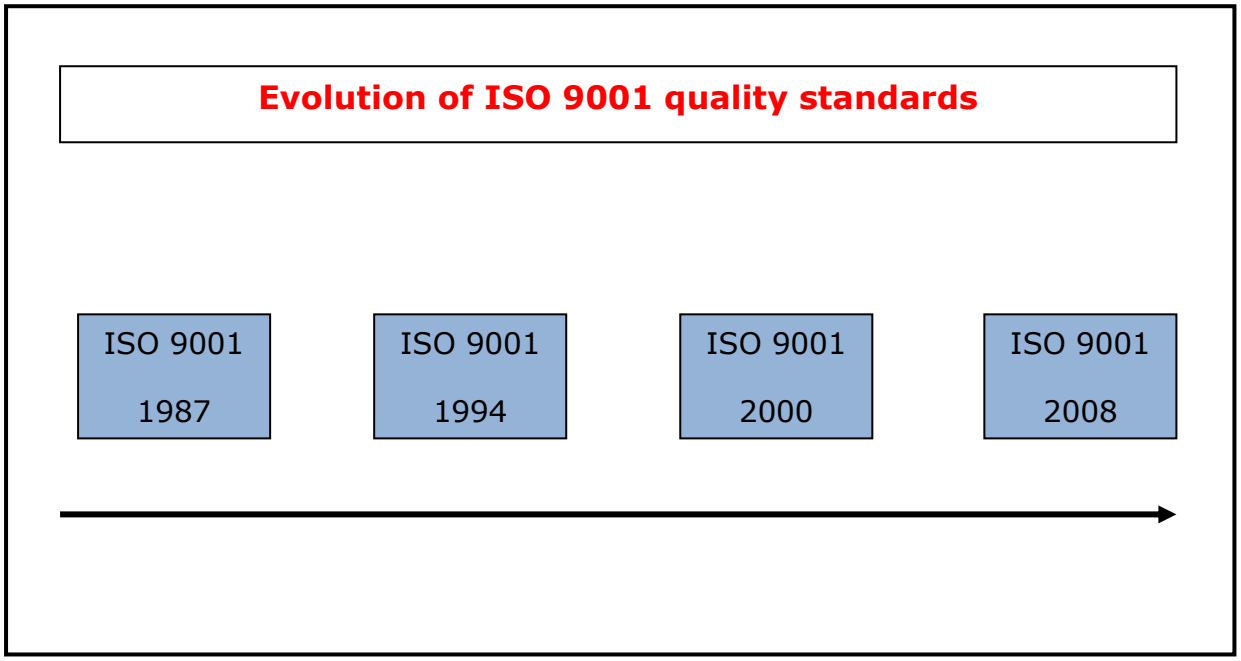
the systemization and formalization of tasks in order to obtain uniformity in the product and to conform to specifications established by the customer".

The ISO 9001:2008 is an international standard on quality management system (QMS) that promotes a systematic approach towards the management of product quality. It was first published by the International Organization for Standardization (ISO) in 1987 and later revised in 1994 and 2000. In 2008, it went through another revision in order to accommodate current needs. Hence, it is now referred to as ISO 9001:2008. Within each published version of the ISO 9000 family, various standards are included.

The newest edition includes three different standards namely ISO 9000, 9001 and 9004.Among them, the core of the quality management system is ISO 9001, while the others provide helpful information and guidance. Hence ISO 9001 will be our focus during the course of this study as it is the core of quality management system.

Below is the simple evolution diagram of ISO 9001 from inception till date

Figure 2: Evolution of quality standards



Source: Modified from QualityGurus.com

It should be noted that the ISO standards are revised because the ISO standards development rule requires periodic review to keep the standards up to date. This must be initiated within a maximum of five years after the publication of the standard. Also the ISO 9001 standards are revised to keep up with recent

development in management practice and to accommodate user input suggestion.

2.2 ISO 9000 in figures

With the central secretariat in Geneva, Switzerland, ISO has managed over the years to establish the most recognized and helpful quality management scheme globally. As a proof of its success, ISO conducts a survey at the end of each year aiming to highlight the continual rise of ISO 9000 users. The latest survey of certification is that of 2008,which reveals that by the end of 2008,the worldwide total of ISO 9000:2000 certificates was at least 982,832 in 176 countries and economies, an increase of 3% over 2007,when the total was 951 ,486 in 175 countries and economies.

It should be noted that the total includes ISO 9001:2000 and ISO 9001:2008 certificates, which have been culminated because ISO 9001:2008 which was published on 15 November 2008, contains no new requirement compared with the older 2000 edition which it replaced.

Moreover, it may be appreciated from the following table below that the big bulge in ISO 9001: 2000 registrations took place in 2003,and this can be explained by the fact that this was the final change-over date from the 1994 version to the 2000 version.

Table 1: ISO 9001:2000/2008 principal results

World results	Dec. 2004	Dec. 2005	Dec. 2006	Dec. 2007	Dec. 2008
World total	660 132	773 867	896 929	951 486	982 832
World growth	162 213	113 735	123 062	54 557	31 346
Number of countries/ economies	154	161	170	175	176

Source: ISO survey of certificates (2008)

Based on continent, the leading continent in ISO 9001 registration has always been Europe. As at December 2008, the share in percent for Europe was

46.33% followed by Far East with 36.28% and North America with 4.87%.But a closer look points out that a rapid lift up has been taking place in the far east for the past five years whilst the European continent has seen a slow decline in numbers of certification gained. Of particular interest is the slow but steady increase in the no. of ISO certification in the Africa and West Asia continent, which now has a share of 7.44% as against 4.76% in 2004. See table below.

Table2: ISO 9000 regional share (expressed in percentage)

Regional share expressed in percent (2004-2008)	Dec. 2004	Dec. 2005	Dec. 2006	Dec. 2007	Dec. 2008
Africa/West Asia	4,76	6,24	7,96	8,29	7,44
Europe	48,59	48,74	46,24	45,35	46,33
Central and South America	2,58	2,91	3,28	4,14	4,06
North America	7,57	7,71	6,84	5,00	4,87
Far East	33,47	31,93	33,51	36,30	36,28
Australia/New Zealand	3,03	2,47	2,18	0,92	1,02

Source: ISO survey of certificates (2008)

Finally, according to the 2008 ISO certification of survey, the Top 10 countries which makes up for the total number of ISO certificates are china who is the lead, Italy, Spain, Japan, Germany, United Kingdom and Korea. As we can see from the table below, it is interesting to note has China has risen steadily over time to become the number one country with the highest number of certification in the world. One can argue that the reason for this is because china is fast becoming highly industrialized nation with so many companies and organizations especially from the western world outsourcing their production activities to China to take advantage of cheap labour cost and the local know-how of china. The results below reflect the huge importance that the Chinese economy is assuming on global trade and worldwide quality.

Figure 3: Top 10 countries for ISO 9001:2000/2008 certificates

Source: ISO survey of certificates (2008)

2.3 ISO 9001:2008 (Revision) overview

ISO 9001:2008 is part of the ISO document that lists the requirements an organization must comply with 9000 family of standards, and is the to become ISO 9001 Registered.ISO 9001:2008 provides a valuable process approach to quality management, by better understanding the "horizontal" interaction of departments or business units within your organization, you can ensure that all of their functions create real value for your customers.

ISO 9001:2008 was published on 15 November 2008. As of 15 November 2009, all audits must be performed against the requirements of this new version of the

standard, any remaining ISO 9001:2000 certificates will become invalid on 15 November 2010. Until then, certificates to ISO 9001:2000 are still considered equal to certificates to ISO 9001:2008.

Compared to the 2000 revision of ISO 9001, ISO 9001: 2008 – the fourth edition of the standard – represents fine tuning, rather than a thorough overhaul. It introduces clarifications to the existing requirements in ISO 9001:2000, based on user experience over the last eight years, and changes that are intended to improve further compatibility with the ISO 14001: 2004 standard for environmental management systems. The new edition of ISO 9001 does not introduce additional requirements, nor does it change the intent of the ISO 9001: 2000 standard. No new requirements have been introduced in the new edition, but in order to obtain the maximum benefit from the clarifications in ISO 9001: 2008, the users of the 2000 edition must consider whether the clarifications have an impact on their current interpretation of ISO 9001:2000. If that is the case, some modifications to the implementation of their quality management system (QMS) based on ISO 9001:2000 may be necessary. As with the preceding editions, certification is not a requirement of ISO 9001:2008. Organizations are free to implement the standard for the internal and external benefits that it brings to them and to their clients. However, it is recognized that hundreds of thousands of ISO 9001 user organizations have chosen to have their QMS independently certified as conforming to the requirements of ISO 9001.
The appendix 1 contains annex B of ISO 9001:2008 which has a full, detailed list of the changes from ISO 9001:2000.

2.4 ISO 9001: 2000

The ISO 9001:2000 has formalized an effective system for evaluating the ability of any firm to consistently design, produce, and deliver quality products/services (Fuentes et al., 2000; Martinez-Lorente and Martinez-Costa, 2004; Terziovski et al., 2003; Wayhan et al.,2002). ISO 9001:2000 provides guidelines for organizations to establish their quality systems by focusing on procedures, control, and documentation (Sun et al., 2004).

Therefore, the objectives of ISO 9001:2000 is the provision of consistency in products, meeting customer and regulatory requirements and having systems that address customer satisfaction, continual improvement, prevention of non-conformity, and the adoption of a system approaching Total Quality management (TQM) (Goetsch and Davis, 2005). The ISO 9001:2000 is based on the concept that certain minimum characteristics of a quality management system could be usefully standardized, giving mutual benefit to suppliers and customers, and focusing on process rather than product/service quality (Van der Wiele et al., 2005; Dick et al., 2002). ISO 9000:2000 is perceived as a management control tool, a driver of innovation, and plays a strategic role within organizations in focusing and ensuring the delivery of quality products/or services (Van der Wiele et al., 2005). This is seen through the fact that ISO 9001:2000 encourages the adoption of the "process approach" for the management of the organization and its processes, and as a means of identifying and managing opportunities for improvement. The processes approach is developed based on the belief that a desired result is achieved more efficiently when activities and related resources are thought of as a process (Bhuiyan and Alam, 2004). Figure 4 illustrates the model of the process-based quality management system approach recommended by ISO 9001:2000, where the process-based model defines a quality management system as a single large process which links sub-processes in a continuous improvement cycle.

The utilization of process approach emphasizes the importance of understanding and fulfilment of requirements, the need to consider processes in terms of added values, obtaining results of processes and continual improvement of process based on objective measures (Tan et al., 2003). Moreover the generic requirements of the new edition are depicted as linked processes (Janas and Luczak, 2002). Figure 4 illustrated the process approach, which include the following as briefly explained by Biazzo and Bernardi (2003, p. 156):

Figure 4: ISO 9001:2000 /2008 process-based quality management system

Source: BS EN ISO 9000(2000)

2.4.1 System's Requirements

As shown in the figure above, the model takes the view that quality starts and ends with the customer, in an attempt to assist in achieving higher customer satisfaction. In addition, it highlights the main processes that are integral to this standard. The Process model consists of four new categories, which incorporates all the clauses included in the previous version and even more. The following categories correspond to ISO 9001's chapters five, six, seven and eight respectively.

- Management Responsibility
- Resource Management

- Product realization
- Measurement Analysis and Improvement

Each one of these categories has a number of sub-clauses. A detailed analysis of the standard that shows that it contains at least 22 smaller processes as identified by Praxiom Research Group Ltd; a Canadian based company (Bhuiyan and Alam, 2005). Nevertheless, the total amount of requirements incorporated in the actual ISO 9001 is more than fifty.

❖ Documentation Requirements

The fourth chapter of ISO 9001 quality management system describes the documentation requirements for implementing the scheme. Particularly the organisation is obliged to present written statements of quality policy and quality objectives, quality manual. Documented procedures required by the standard and records keeping for planning, operating, and controlling all processes. However, while the included documentation clauses are mandatory to all organisations, the extend of detail may vary depending on the firm's size and type of activities, the complexity of processes and their interaction, and the competence level of the workforce (ISO,2006).

❖ Management responsibility

According to this category of the model, senior management should provide evidence of its commitment to the successful and effective development and continuous improvement of the scheme. In addition, since this is a customer-driven system, it should be indicated that top management ensures the determination of customer requirements and expectations. Another significant aspect of management responsibility, that is also mandatory for ISO 9001 registration, is the promotion if internal communication among all involved parties so that all processes and procedures are ensured to operate at the highest degree of effectiveness.

One way of documenting these requirements is through the firm's quality policy which represents the basic aims and goals with regards to quality. Another proof

could be through presenting evidence that quality objectives are defined and reviewed periodically. Nevertheless, written statements are not enough. Actions such as conducting internal audits or customer surveys, concerning their satisfaction and loyalty towards the firm's products or services, are essential. Even more, a management review of the organization's quality management system should be planned at frequent intervals so that suitability, adequacy and effectiveness are ensured.

- **Resource Management**

The intent of this clause is to make sure that the audited firm provides the resources required for implementing, maintaining and continually improving the quality system. In this context, human resources, infrastructure and working environment should be managed at the most competent level. This means that evidence has to be provided that the organisation aims at improving the performance of its employees, equipment, supporting services as well as the workplace.

As essential part of good plan, regarding personnel performance is to appropriately plan work allocation. In this way, an employee is ensured to carry out the job that he knows best. Moreover, education and training should be fundamental elements in the firm's agenda, in order to enhance its overall operational performance and avoid nonconformity. For the case of infrastructure, which basically consists of the premises and machinery, a good plan would be to develop various investment initiatives such as expansion of buildings or purchases of new equipment. Similarly, it is important to ensure that working conditions within the organisation are suitable. Actually, international legislation nowadays, places strong focus to be addressed could be involved with providing the appropriate lighting or air quality in the work environment and performing frequent maintenance to the plants and equipments.

- **Product Realisation**

Since all organisations are involved in the production of either products or services, it is essential for them to be able to effectively manage all aspects of the production process, from the determination of customers' desires and

through to the design and development, production and final preservation of the finished output. Indeed, this clause is solely dedicated to product realisation having as a target to verify that product or services conformity is achieved. Simply put, it is required that the organisation monitors and keeps records for the process of transforming inputs into end-products or services.

The process initiates from the development of an effective communication channel with customers which is necessary for determining the requirements specified by then as regard to products specification, delivery or post-delivery activities. Furthermore, it encompasses the documented procedure required for providing that the organisation keeps track of the production process. This includes the design and development of product, purchasing and verification of purchased products, control of production and validation of processes for production and service provision. In addition, product identification and traceability is necessary so as to be able to recognise the status of the product/service at all times. Actually, this attribute finds god use in the case of need for product withdrawal from the market. After the production process is complete, the organisation is obliged to ensure the preservation of the output in terms of providing efficient storage areas and appropriate handling equipment and following all regulations on packaging, storage periods and delivery.

- **Measurement, Analysis and Improvement**

Although the aspect of conducting market surveys, aiming to determine customers' requirements, is important to the standard, the process of measuring and analysing the collected data is even more vital. In line with this suggestion, the organisation shall be keen in evaluating its position against customers, having as a target to instil their satisfaction. Furthermore, monitoring and measurement should be conducted on products and processes, so as to verify their conformance to specifications. Audited enterprises are expected to undertake periodic internal audits and provide evidence for documented corrective and preventive actions. Additionally, they have to be able identify and control non-conforming products and further to follow procedure to follow procedures for correcting or even avoiding their occurrence.

One of the most critical modifications, within the revised ISO 9000:2000, is the addition of the continuous improvement sub-clause. According to this request, companies shall take all appropriate measures to endlessly advance the QMS, through the use of quality objectives, analysis of data, audit results, corrective and preventive actions and management review. Once again, it is suggested that any improvement activities should be taken step-by-step. What is meant by this, is that when opportunities for improvement are identified, they should be implemented based on the available resource and in alignment with the regulations. Even more, it might sometimes be needed to prioritize the application of such activities.

Finally,ISO 9001:2000 uses the PDCA (Plan-Do-Act-Check) improvement circle to enclose the four blocks of management responsibilities, resource management, process management, measurement, analysis and improvement (Ho, 2002). The PDCA methodology can be applied to all processes and can briefly be described as follows:

(1) Plan. Establish the objectives and processes necessary to deliver results in accordance with customer requirements and the organization policies.
(2) Do. Implement the processes.
(3)Check. Monitor and measure processes and products against policies, objectives and requirements for the product and report the results.
(4) Act. Take actions to continually improve process performance.

ISO 9000 certification supposed to help companies to identify mistakes, streamline their operations, and be able to guarantee a consistent level of quality products/services (Kartha, 2002). In support of this further, Dick (2000, p. 368) stated that: "you should expect greater responsibility, accountability and quality consciousness among your staff, better use of time and resources, greater consistency and traceability of product/service, less wastage through product or service failure, continual improvement to your quality and efficiency, improved profit and wider market opportunities".

2.5 Implementation Process

Following the principle that the development of any quality management scheme should not be made through hasty radical changes, it can be realised that in order for ISO 9001 to perform more efficiently, its implementation should be based on a gradual step-by-step build up. Interestingly, a study by Motwani et al (1996), which is one of the most often cited in the literature, reveals that the path towards certification is on average, a two years long process, and it consists of eight distinct stages. Of course, it is possible that some companies will manage to achieve registration earlier while others are likely to face more difficulties and thus extend the registration period even longer. In any case, it is essential that the organisation matures enough so that to clearly anticipate what is involved within the system, what are the requirements, and prepare appropriately.

According to Motwani et al's(1996) model, when initially starting to get ready for ISO 9000, the organisation needs to go through the awareness stage. At this point, information needs to be obtained by attending seminars on ISO 9000. Following the organisation moves on the management decision and commitment stage where they shall set the deadlines and goals regarding the scheme's implementation. An essential part of this stage involves the in-depth analysis of the standards and decisions should be made as to if the system will affect the firm's activities and related processes. If the organisation wishes to proceed with the application of the standard, the next step involves the initial preparation. Some of the key elements incorporated within this stage are the establishment of task teams and quality control council, the familiarization of the personnel with the system and the selection of a third party association body that will provide some guidance along the way and will perform the final audit and assessment. The next stage is the most challenging and time consuming and it has to do with the preparation of the quality manual. In fact, this is where the guidance from the independent association bodies comes in handy. Notably, based on their suggestions, and after the determination of the processes that need to be modified so they comply with ISO 9001's requirements, the organisation shall establish audit procedures, upgrade procedures and provide basic training to its employees. After that, a pre-audit assessment stage follows

aiming to ensure the adequacy and compliance of the applied procedures. Even more, at this point the organisation needs to develop appropriate corrective actions that would provide the flexibility to respond rapidly to potential inefficiencies and breakdowns.

The next step involves an initial quality audit that basically serves as a rehearsal for the final assessment. According to Juran(1998), a quality audit can be defined as an independent re-evaluation which is conducted in order to compare some aspects of a firm's quality performance with the standards for that performance. Typically, there are two types of audit namely the internal audit; where the organisations quality management system comes under the scrutiny of a third party accreditation body or even the customers' (Tannock, 2010). In the case of the initial internal audit, the organisation shall inspect the efficiency of the applied scheme and in case of non-conformance; it shall develop a corrective action plan. If any types of deficiencies occur, a follow-up audit and final assessment takes place so as to ensure that scarcities are corrected.
Despite the fact that this is not common, sometimes, companies may get it right from the first time. If that is so, a follow-up audit is not required, and they move to the final step of the implementation process. This involves the final assessment and registration to ISO 9001:2000. At this point, it is suggested by the standard that the effort should not be abandoned as certification is achieved, but rather the accredited firms shall maintain registration and ensure that further internal audits are planned at frequent time intervals. Even more, they should set continuous improvement goals so that overall quality will be enhanced ubiquitously.

2.6 Driving forces for seeking certification

Although the motive for implementing an ISO quality management scheme are usually concerned with cost reduction, productivity improvement and quality improvement, surveys point out that companies select to do it for other reasons as well.Yahya and Goh(1999) note that the reasons that push companies to achieving ISO 9000 certification can vary depending on the type of firm and can be grouped into categories.Lipovatz et al (1999) indicate two main groups,

namely external or market related and internal reasons. In addition, Jones et al. (1997) identify three main categories namely developmental, on-developmental and mixed reasons. According to them, on-developmental reasons are linked to the external environment of the firm and are driven mainly by major customer's requirements and the desire not to be locked out of the market. On the other hand, developmental reasons have to do with the desire to enhance the overall competitive performance of the organization and to improve internal process. Consequently, it can be extracted that although researchers may use different terms, they all concur to external circumstances, internal procedures or a mixture of both as being the prime drivers towards ISO certification.

However, empirical evidence shows the dominance of external factors. A study conducted by Fuentes et al.(2000) indicates that most companies apply a quality management system such as ISO 9000,because of their customer's requirement meaning that they mainly aim at improving their image in order to enter new markets.Furthermore,this is supported by the studies of Vouzas and Gotzamani (2005),Bhuiyan and Alam (2005),and Lipovatz et al.(1999).Other than customer requirement, a survey undertaken by the intercollege (2003) in Cyprus, shows that many companies also choose to initiate the ISO 9000 due to the fact that competitor companies has already done so.Actually,this motive reflects on their desire not to be perceived as inferior against rival firms in terms of quality.

There are various literatures that have suggested many reasons as to why companies seek ISO certification (Buttle, 1997; Magd, 2004). These reasons from various literature were condensed to 14 reasons in the survey carried out on Egyptian companies(see Table 3), the driving forces were adapted from a similar study performed on an African country by Magd (2004).Participants were asked to rate the importance of these reasons on a five-point scale.
Table 3 presents the driving forces as identified by the participants in terms of mean score and standard deviation. It also presents rank ordered responses. It is clear from Table 3 that the most important driving forces for seeking ISO 9001:2000 certification are to improve the efficiency of the quality system; to achieve customer satisfaction; pressures from competitors/foreign partners; to maintain/increase market share; avoid potential export barrier and to meet government demands requirements or pressure.

Improving the efficiency of the quality system and achieving customer satisfaction appear to be the leading driving forces for seeking ISO 9001:2000. It is clear that Egyptian managers recognized that the standard is geared towards quality system efficiency and customer satisfaction rather than achieving quality improvement ranked seventh place. Seeking ISO 9001:2000 as a step towards Total Quality Management (TQM) was not a significantly important driving force for seeking certification. This is an interesting observation, as it reflects the Egyptian manufacturing companies' level of ambition with regard to quality as well as their awareness and understanding of the possibilities of using the standard as a tool for internal growth.

Table 3: Driving forces for ISO 9001:2000 certification

Rank	Driving forces (adapted from Magd, 2004)	M[a]	SD[b]
1	To improve the efficiency of the quality system	4.71	0.42
2	To achieve customer satisfaction	4.68	0.48
3	Pressures from competitors/foreign partners	4.64	0.49
4	To maintain/increase market share	4.62	0.50
5	Avoid potential export barrier	4.60	0.57
6	To meet government demands, requirements or pressure	4.56	0.60
7	To achieve quality improvement	3.71	1.02
8	To market products in the international arena	3.64	1.10
9	To use ISO as a marketing/promotional tool	3.47	1.42
10	To be a step towards TQM	3.29	1.30
11	To achieve cost reduction	3.19	1.27
12	To meet corporate objectives	2.24	1.20
13	To improve employees' relations	2.17	1.18
14	Capturing worker's knowledge	2.14	1.09

Source: Modified from Magd, 2006

2.7 Barriers to ISO effective implementation

Evidently, the path towards ISO 9000 registration is not always pleasant or easy. A survey of Singapore industries identifies that the main barriers against the implementation of the scheme are lack of management support and commitment, employee resistance to change, lack of understanding of the ISO 9000 system and constraints of resources (Quazi and Padibjo, 1998).Moreover, Lipovatz et al. (1999) expose difficulty in training of personnel and allocation of workforce responsibilities as prime complications in Greek companies. For

Cyprus enterprises, the study conducted by the intercollege (2003) reveals that the system's bureaucracy and the addition of time consuming procedures were the major road blocks.Yet,the above finding seems to depict only general difficulties of ISO 9000 certification and they do not offer any information on the level of difficulty in fulfilling each of the scheme's requirements (yahya and Goh,2001).having this in mind, they note that studies on this area will be valuable for those companies that are preparing for ISO 9000 accreditation.

In comparison with other studies (Mezher et al., 2004; Ruzevicius et al., 2004; Bhuiyan and Alam, 2005; Magd, 2004; Chow-Chua et al., 2003; Lee, 2004; Yahya and Goh, 2001;Calisir et al., 2001), these studies suggested the most important barriers to ISO implementation are top management commitment, financial resources and training and education. It is clear that the present findings are consistent with previous studies, which focused on ISO 9001:2000 and ISO 9000: 1994, which confirmed that top management commitment, financial resources and training and educations are reported as the main barriers for the effective implementation. The findings are extremely significant for policy makers, whom can easily identify which barriers can be reduced or eliminated to produce an effective implementation of ISO 9001:2000.

Below is the result of the analysis carried out by a team of researchers who found out by their research that lack of top management commitment was the most important barrier to implementing ISO 9001:2000 whilst the least important factor as found out was deficient supplier control

Table 4: Barriers to ISO 9001:2000 implementation

Rank	Barriers	Mean[a]
1.	Top management commitment	4.52
2.	Lack of qualified personnel	4.47
3.	Insufficient quality education and training	4.39
4.	Lack of financial resources	4.21
5.	Failure to define responsibility and authority for personnel	4.11
6.	Poor supplier involvement	3.97
7.	Organizational resistance to change	3.87
8.	Difficulties in motivating staff participation	3.69
9.	Scratchy documentation, procedures and records	2.89
10.	Lack of experience in establishing quality systems	
11.	Deficient supplier control	2.62

Source: Adapted from Magd,2005

Based on the data collected and provided, it was suggested that the barriers listed above can be classified into three major ones, which are as follows:
(1) Organizational commitment through top management commitment; failure to define responsibility and authority for personnel; organizational resistance to change; and difficulties in motivating staff participation.
(2) Resources through lack of financial resources; insufficient quality education and training; and lack of qualified personnel.
(3) Quality system and suppliers through scratchy documentation, procedures and records; and poor supplier involvement.

Certainly, not only obstacles occur prior to registration. According to chin et al. (2000), the maintenance of the system after certification is also crucial. Their study suggest that the most significant clauses in maintaining ISO 9000 are corrective and preventive actions, internal quality audits, management responsibility, document and data control and control of quality records.

2.8 Benefits from ISO registration

The international Standards Organisation, national accreditation registrars and the third party accreditation bodies in Europe and the USA all make claims for ISO 9000 certification leading to business performance improvement. Even so,

ISO's claims are very subjective and mainly concerned with "doing things better" and providing real benefits to all businesses, customers, governments, trade officials, consumers, developing countries and the entire planet as a whole(ISO, 2006). On the contrary, the British Standards Institute claims more objective benefits such as greater responsibility, accountability and quality consciousness among staff, better use of time and resources, greater consistency and traceability of product of service, less wastage through product or service failure, continual improvement to quality and efficiency, increased profitability and wider market opportunities (Dick, 2000). In addition, the American National Accreditation Board (ANAB), The US accreditation body for quality management systems, states that the most substantial benefits from implementing a scheme based on ISO 9000 includes increased operational efficiency, cost savings from less scrap and rework, cost savings from fewer warranty claims, a competitive edge, perceived higher quality, and increased market share(ANAB, 2006). In the same line, the UK-based National Quality Assurance (NQA) institute, an accredited certification body carrying out third party assessment in both the UK and the USA, makes specific states. Particularly, it claims that ISO 9000 reinforces a company's management system, provides a framework for controlling and improving business activities, adds value to products and services, adds to competitiveness and provides a market edge (NQA, 2006)

Besides the opinions of these international accreditation bodies, various scholars and researchers have conducted surveys in order to determine whether ISO 9000 registration is beneficial or not. Actually, it has been confirmed that ISO's successes is not without reason. Without doubt, the findings of such surveys should be considered much more objective and helpful since they are based on real world organisations that have already implemented the scheme and thus observed its effects. At this point, it should be states that the overall benefits the organisations gain from the standard are related to the motive that initiated the drive for the certification. Therefore, just as the motives for seeking accreditation are grouped into internal or market related, most studies focus on the benefits achieved either in the internal or external organisational environment. Poksinska et al..,(2006) argues that the organisations that seek certification due to the desire to enhance internal processes usually achieves higher overall benefits. Conversely, companies that apply ISO 9000 because of

the market pressure, achieve major benefits mostly in the fields concerned with corporate image and market position.

Comparing the findings on the main positive outcomes of implementing ISO in Egyptian manufacturing organizations and other studies on ISO 9000: 1994, Magd (2004), Magd and Curry (2003); Dissanayaka et al. (2001), Ragothaman and Korte (1999), Van Der Wiele et al. (2000), Yahya and Goh (2001), Dick et al. (2001) and McAdam and Fulton (2002) investigated the main benefits of implementing ISO in Egypt, Hong Kong, the USA, Malaysia, The Netherlands, Spain, the UK, and the Republic of Ireland. These studies were similar to the present study, and it should be made clear that the methodology is different, but the results are comparable with the present study. They suggested that the most important benefits occurring from implementing the standard were: Improves documentation; improves the efficiency of the quality system; clearer work instruction/procedures and job responsibilities; helps supplier selection; improves product/service quality; helps develop quality management; promotional tool; improves export potential; improves profitability; expansion to international markets; customer satisfaction; increase quality awareness; improves employee relations; improves employee motivation; and improves employee productivity.

Magd (2004), Brown and Van der wiele (1995) and Vloeberghs and Bellens (1996) concluded that improving the efficiency of the quality system was a very important benefit of ISO implementation, which is consistent with the present study and also it demonstrated that the internal perceived benefits were highly appreciated and presented. Therefore, it can be concluded that the results of the present study are strongly supported and consistent with the findings of Previous studies on ISO 9000: 2000.

2.8.1 Internal Benefits

Generally, the main kinds of internal benefits that occur from ISO 9000 certification can be grouped under the headings of quality improvement, employee's development and operations efficiency. According to casdesus and

Karapetrovic (2005), companies find most positive impact on the reduction of non conformities and health and safety at work. Interestingly, the second factor represents a new addition to the requirements of ISO 9000:2000 as compared to the previous version. Furthermore, Gustafsson et al..,(2001) also identifies the reduction of scrap and defects as significant internal effects but also reveal improved traceability as an additional gain. Additionally, Brown (1998) notes that the most important benefits mentioned include not only improvements in the quality of products and services, but also improved management control and quality awareness. Improved quality awareness by employees was also one of the most important benefits found by Nwankwo(2000). Other than the already stated, Dissanayaka et al.(2001) in their study of Hong Kong constructors, highlights the most substantial benefits as more systematic record keeping, improved internal communication, improvement in internal performance appraisal systems, enhanced competitiveness of company and continual improvement of operation.

2.8.2 External Benefits

The most often mentioned external effects are improved image and the opportunity to use ISO 9000 as a marketing tool (Nwankwo, 2000). In addition, Casdesu and Karapetrovic's (2005) survey exposes that a total of 66% have enhanced relationships with their suppliers. This is further supported by Dissanayaka et al.(2001) who identify greater client satisfaction, having a valuable marketing tool, clients' perception of higher quality of work done, and better access to domestic markets as the principal positive external outcomes from ISO 9000 certified quality systems.

2.9: Criticism of ISO certification

Despite the numerical success of ISO 9000, a considerable number of criticisms of the certification exist, as it is not a risk-free undertaking. ISO 9000 registration does not guarantee improved performance due to the high explicit and implicit costs associated with implementation (Van der Wiele et al., 2005;

Curkovic and Pagell, 1999). Van der Wiele et al. (2005), and Bhuiyan and Alam (2005) indicated that ISO 9000: 2000 perceived as having higher development and maintenance costs. The cost of certification can be very high ranging from $10,000 to $250,000 (Withers and Ebrahimpour, 2001). The variation in costs depends on the suitability and efficiency of existing systems and the competence of the employees (McAdam and Jackson, 2002: Mo and Chan, 1997) Stevenson and Barnes (2001) identified four factors that tend to generate costs in achieving certification: time, training, consultants and the registration itself. Moreover, another perceived criticism of the ISO 9000 was the primary concern with the generation of documentation to describe steps to be taken when problems are encountered (Bhuiyan and Alam, 2005). This is evident through a survey of UK quality management which concluded that ISO 9000 had been reduced to a "mechanical approach" and as being "paperwork driven" (Wilkinson et al., 1994).

Furthermore, the standard may interfere with new and better ways of operating, quality by inspection is not quality, and too heavy reliance on people's and in particular assessors' interpretation of quality (Seddon, 1997; Stevenson and Barnes, 2001; Douglas et al., 2003). Also the certifications tend to provide indicators that the certified organization has complied with process requirements, but they do not guarantee that the supplier produces quality products and/or services that actually meet customer requirements (Abraham et al., 2000; Singels et al., 2001), and may discourage creative and critical thinking, because employees are forced to work according to well-described procedures and rules (Casadesus and Karapetrovic, 2005).

Recently, various studies have confirmed that ISO 9000 certifications are too expensive, too time consuming, resource-consuming, too formalized and impersonal and that costs are greater than the benefits derived (Casadesus and Karapetrovic, 2005; Bhuiyan and Alam, 2005; Dick, 2000; Augustyn and Pheby, 2000).

2.10 How developing countries benefit from ISO standardization

According to ISO website, "Giving fish" is one way of assisting developing countries. By implementing International Standards and participating in their development, developing countries learn how to fish for themselves.
Developing countries generally have scarce resources. Therefore, the need to invest them wisely is more acute than in stronger economies because there is no cushion for absorbing mistakes. Making the wrong choice may have serious economic or social consequences, as, for example, when:

- an imported technology turns out to be unsuitable for local conditions and drains the investment in an industrial development programme
- an effort to export local products comes to nothing because they do not meet regulations or consumer criteria on foreign markets
- precious foreign currency is wasted on importing over-sophisticated health care products because technical criteria for evaluating the market offerings are not available locally.

The International Standards developed by ISO offer developing countries practical solutions to such problems because they represent a reservoir of technological know-how and of product, performance, quality, safety and environmental specifications. These standards have the advantage of being backed by an international consensus on the state of the art. Implementing ISO standards brings advantages such as the following to developing countries:

- avoiding the waste of resources by "reinventing the wheel"
- transferring state-of-the-art technological know-how
- supplying criteria for making reasoned choices when evaluating foreign market offerings, whether of technology or consumer products
- safeguarding public health and safety by establishing a base of requirements for application to local or imported products in these regulated areas
- providing internationally accepted specifications that can be applied to the development, manufacturing and marketing of local goods and

services, thus raising the country's ability to compete on export markets worldwide.

By actually participating in the development of International Standards, developing countries can realize other benefits, such as the opportunity to:

- acquire technological know-how directly
- influence the technical content of standards important to their economy
- gain "hands-on" experience in standardization work that can be put to use in building up their own national infrastructures.

CHAPTER 3: ECONOMIC HISTORY AND OVERVIEW

This chapter provides a brief description of the economic overview of the countries under review and presents the trend of the (GDP) i.e. economic indicator used in this dissertation. The aim of this chapter is to give a background into the economies of these countries as it will later form part of the bedrock for my discussion in chapter four. See appendix 3 for the GDP raw data.

3.1 Overview of China's economy

China's economy during the past 30 years has changed from a centrally planned system that was largely closed to international trade to a more market-oriented economy that has a rapidly growing private sector and is a major player in the global economy. Reforms started in the late 1970s with the phasing out of collectivized agriculture, and expanded to include the gradual liberalization of prices, fiscal decentralization, increased autonomy for state enterprises, the foundation of a diversified banking system, the development of stock markets, the rapid growth of the non-state sector, and the opening to foreign trade and investment.

Annual inflows of foreign direct investment rose to nearly $108 billion in 2008. China has generally implemented reforms in a gradualist or piecemeal fashion. In recent years, China has re-invigorated its support for leading state-owned enterprises in sectors it considers important to "economic security," explicitly looking to foster globally competitive national champions. After keeping its currency tightly linked to the US dollar for years, China in July 2005 revalued its currency by 2.1% against the US dollar and moved to an exchange rate system that references a basket of currencies. Cumulative appreciation of the renminbi against the US dollar since the end of the dollar peg was more than 20% by late 2008, but the exchange rate has remained virtually pegged since the onset of the global financial crisis.

The restructuring of the economy and resulting efficiency gains have contributed to a more than tenfold increase in GDP since 1978. Measured on a purchasing power parity (PPP) basis that adjusts for price differences, China in 2009 stood

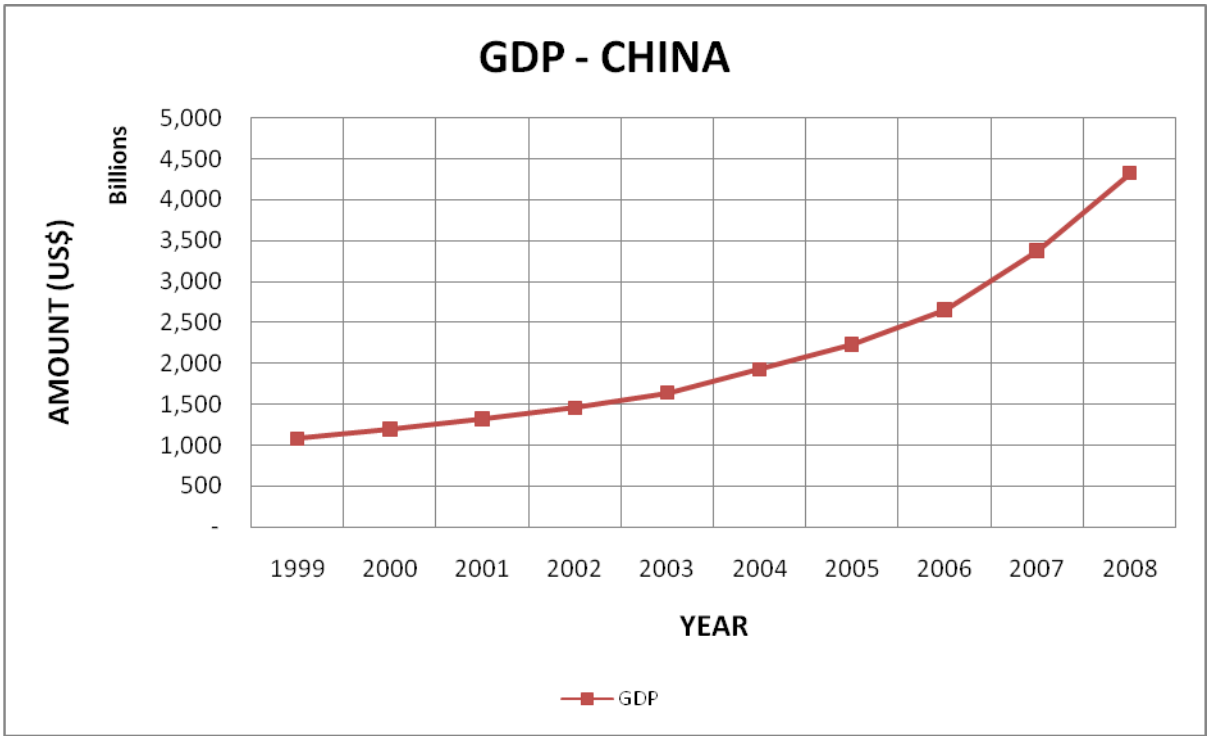
as the second-largest economy in the world after the US, although in per capita terms the country is still lower middle-income. The Chinese government faces numerous economic development challenges, including: (a) reducing its high domestic savings rate and correspondingly low domestic demand through increased corporate transfers and a strengthened social safety net; (b) sustaining adequate job growth for tens of millions of migrants and new entrants to the work force; (c) reducing corruption and other economic crimes; and (d) containing environmental damage and social strife related to the economy's rapid transformation levels. In 2009, the global economic downturn reduced foreign demand for Chinese exports for the first time in many years.

Foreign investment remains a strong element in China's rapid expansion in world trade and has been an important factor in the growth of urban jobs. In 1998, foreign-invested enterprises produced about 40% of China's exports, and foreign exchange reserves totalled about $145 billion. Foreign-invested enterprises today produce about half of China's exports (the majority of China's foreign investment come from Hong Kong, Macau and Taiwan), and China continues to attract large investment inflows. However, the Chinese government's emphasis on guiding FDI into manufacturing has led to market saturation in some industries, while leaving China's services sectors underdeveloped. From 1993 to 2001, China was the world's second-largest recipient of foreign direct investment after the United States. China received $39 billion FDI in 1999 and $41 billion FDI in 2000. China is now one of the leading FDI recipients in the world, receiving almost $80 billion in 2005 according to World Bank statistics. In 2006, China received $69.47 billion in foreign direct investment.

Outward foreign direct investment is a new feature of Chinese globalization, where local Chinese firms seek to make investments in both developing and developed countries. The government vowed to continue reforming the economy and emphasized the need to increase domestic consumption in order to make China less dependent on foreign exports for GDP growth in the future.

Below is a graph of the Chinese economy for a 10year period (1999-2008),showing the growth in the Chinese economy in terms of GDP .From the graph below, it can be said that between 1999-2008,china’s economy has experienced a speedy growth to their economy.

Figure 4: GDP-China, (1999-2008)



Source: CIA,World fact book.

3.2 Overview of Kenya's economy

Although the regional hub for trade and finance in East Africa, Kenya has been hampered by corruption and by reliance upon several primary goods whose prices have remained low.

Kenya is one of the few countries in the world that grew faster in 2009 compared to 2008, according to a December 2009 *Kenya Economic Update* published by the World Bank Kenya Office in Nairobi. The projected growth rate of 2.5 percent in 2009, compared to 1.7 percent in 2008, followed a slow recovery from a quadruple shock: post election violence in early 2008, oil and food price increases, and the global financial crisis; and in 2009, the worst drought in a decade. But the growth rate was lower than its population growth rate and per capita income remained unchanged. The impact of the multiple shocks were particularly felt in the third quarter of the year, when the economy

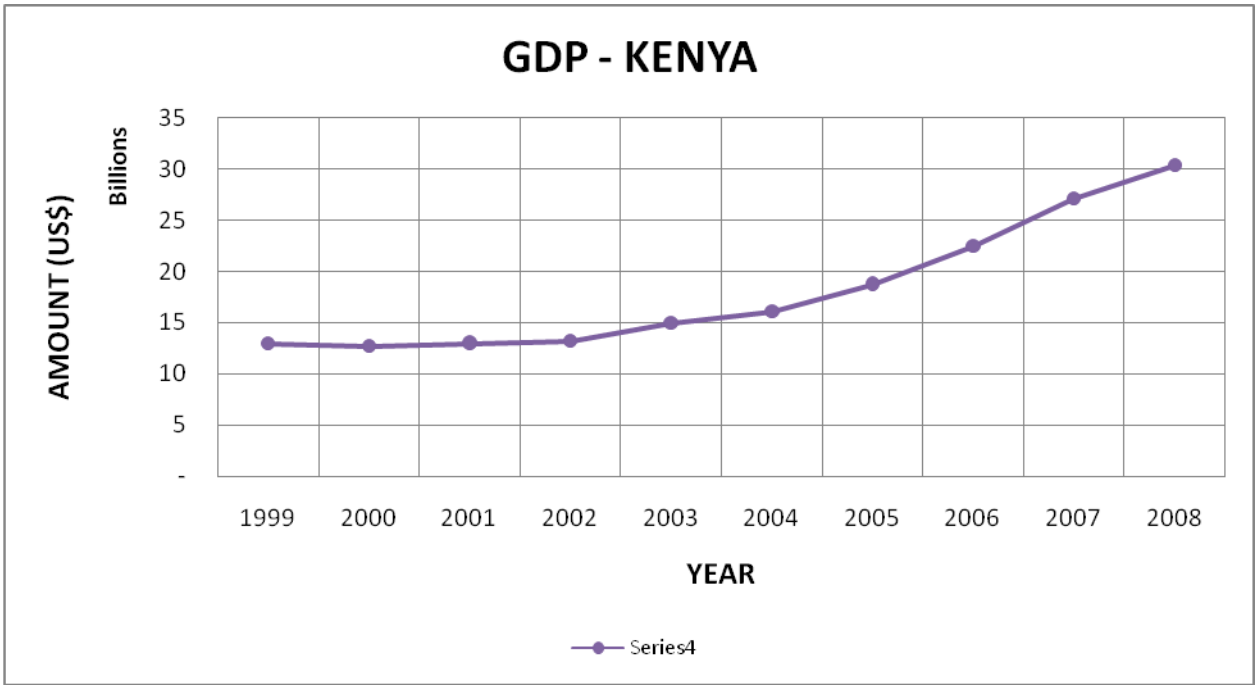
stagnated, compared to a growth rate of 4.0 percent and 2.1 percent in the first and second quarters respectively. Output of goods and services remained at the same level as for the same quarter in 2008.

Agriculture, the mainstay of the economy accounting for 23.4percent of GDP, contracted by 3.5percent. The drought also affected water and electricity supply. High cost of electricity in turn had a negative impact on manufacturing and transport. Manufacturing, transport and communications, and construction, which combined account for 25percent of GDP, declined by 2.4percent, 1.8percent and 1.1percent respectively in the third quarter. However, the services sector remained robust, with hotels and restaurants registering a growth rate of 44percent. The expectation is that the economy will return to the earlier trend of recovery, as agricultural production, water and electricity supply have improved following heavy rains in most parts of the country since December 2009. The government has adopted an expansionary fiscal policy including a fiscal stimulus targeted at infrastructure and agriculture to cushion the economy from further contraction.

Finally, it will be ideal to look into the recent political development that happened in Kenya as this has its impact on the economy. The Grand Coalition Government was sworn in on April 17, 2008 and it continues to address short term issues of national reconciliation and resettlement of internally displaced persons. The coalition was established under a National Accord and Reconciliation Agreement with an equally shared portfolio balance between PNU and ODM (two most active political groups), following a political crisis and violence that followed the announcement of the results of the prudent.

The trend of Kenya's economy in terms of GDP for a 10 year period (1999-2008) is shown below. One thing that can be noted from this diagram is the steady but increased growth in the Kenyan economy during the years in review.

Figure 5:GDP-Kenya (1999-2008)



Source: CIA,World fact book.

3.3 Overview of Nigeria's economy

The Nigerian economy is one of the most developed economies in Africa. According to the UN classification, Nigeria is a middle-income nation with developed financial, communication and transport sectors. It has the second largest stock exchange in the continent.

The petroleum industry is central to the Nigerian economic profile. It is the 12th largest producer of petroleum products in the world. The industry accounts for almost 80% of the GDP share and above 90% of the total exports. Outside the petroleum sector, the Nigerian economy is highly amorphous and lacks basic infrastructure. Several failed efforts have been made after 1990 to develop other industrial sectors

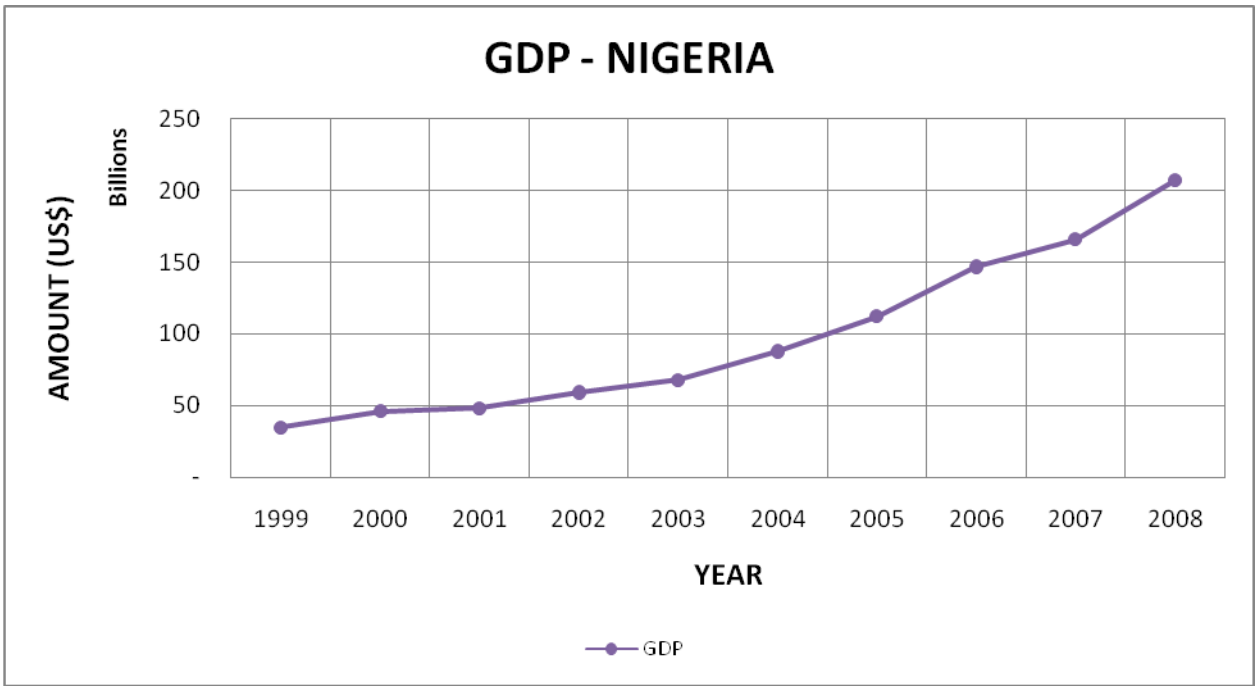
Oil-rich Nigeria, long hobbled by political instability, corruption, inadequate infrastructure, and poor macroeconomic management, has undertaken several reforms over the past decade. Nigeria's former military rulers failed to diversify

the economy away from its overdependence on the capital-intensive oil sector, which provides 95% of foreign exchange earnings and about 80% of budgetary revenues. The largely subsistence agricultural sector has failed to keep up with rapid population growth - Nigeria is Africa's most populous country - and the country, once a large net exporter of food, now must import food. Following the signing of an IMF stand-by agreement in August 2000, Nigeria received a debt-restructuring deal from the Paris Club and a $1 billion credit from the IMF, both contingents on economic reforms. Nigeria pulled out of its IMF program in April 2002, after failing to meet spending and exchange rate targets, making it ineligible for additional debt forgiveness from the Paris Club. Since 2008 the government has begun showing the political will to implement the market-oriented reforms urged by the IMF, such as to modernize the banking system, to curb inflation by blocking excessive wage demands, and to resolve regional disputes over the distribution of earnings from the oil industry.

In 2003, the government began deregulating fuel prices, announced the privatization of the country's four oil refineries, and instituted the National Economic Empowerment Development Strategy, a domestically designed and run program modelled on the IMF's Poverty Reduction and Growth Facility for fiscal and monetary management. In November 2005, Abuja won Paris Club approval for a debt-relief deal that eliminated $18 billion of debt in exchange for $12 billion in payments - a total package worth $30 billion of Nigeria's total $37 billion external debt. The deal subjects Nigeria to stringent IMF reviews. Based largely on increased oil exports and high global crude prices, GDP rose strongly in 2007-09. President YAR'ADUA has pledged to continue the economic reforms of his predecessor with emphasis on infrastructure improvements. Infrastructure is the main impediment to growth. The government is working toward developing stronger public-private partnerships for electricity and roads.

Figure 8 below is a graph of the Nigerian economy for a 10year period showing the growth in the Nigerian economy in terms of GDP over these periods. A few ups and down can be noticed along the years between 1999-2008.For example, in the year 2007,there was a slight drop in the GDP and this can be argued to be caused by a rapid drop in the international price of crude oil in that particular year.

Figure 6: GDP-Nigeria (1999-2008)



Source: CIA,World fact book.

3.4 Overview of Mexico's economy

Mexico is the second-largest economy in Latin America, dependent heavily on oil exports, trade with the United States and money sent home by the millions of migrant workers in the US. In 2009 remittances took a heavy blow decreasing 15.7 percent in contrast with the previous year, according to Mexico's Central Bank. According to CONEVAL (National Council on Evaluation of Social Development Policy) around 47.4 percent of the population is considered poor.

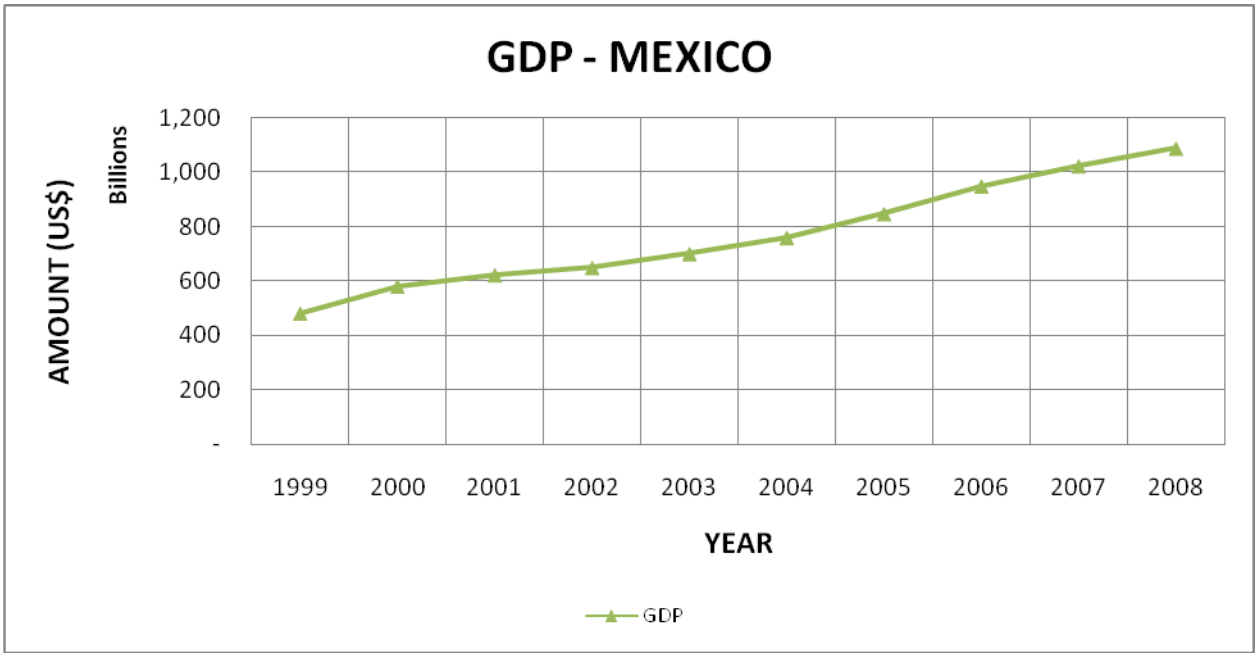
Mexico has a free market economy in the trillion dollar class. It contains a mixture of modern and outmoded industry and agriculture, increasingly dominated by the private sector. Recent administrations have expanded competition in seaports, railroads, telecommunications, electricity generation, natural gas distribution, and airports. Per capita income is roughly one-third that of the US; income distribution remains highly unequal. Trade with the US and Canada has nearly tripled since the implementation of NAFTA in 1994. Mexico has free trade agreements with over 50 countries including, Guatemala, Honduras, El Salvador, the European Free Trade Area, and Japan, putting more than 90% of trade under free trade agreements.

In 2007, during its first year in office, the Felipe CALDERON administration was able to garner support from the opposition to successfully pass pension and fiscal reforms. The administration passed an energy reform measure in 2008 and another fiscal reform in 2009. Mexico's GDP plunged 6.5% in 2009 as world demand for exports dropped and asset prices tumbled, but GDP is expected to post positive growth late in 2010. The administration continues to face many economic challenges, including improving the public education system, upgrading infrastructure, modernizing labour laws, and fostering private investment in the energy sector.

Mexico was hard hit by the global economic crisis and the collapse of international trade during the last quarter of 2008 and the first quarter of 2009. The Mexican economy is starting to rebound. In line with a global recovery in production and trade, economic activity in Mexico picked up in the second half of 2009 and is off to a strong start this year. A 4 percent growth is expected for 2010.

The recovery is led by resurgence in the demand for exports. Manufactured exports were down by 25 percent during the first half of 2009 compared to the same period of the previous year.

Figure 8: GDP-Mexico (1999-2008)



Source: CIA,World fact book.

3.5 Overview of Egypt’s economy

Egypt is the world's largest exporter of cotton and its textile industry is large. Other industries include the production of cement, iron and steel, chemicals, fertilizers, rubber products, refined sugar, tobacco, canned foods, cottonseed oil, small metal products, shoes, and furniture. Although the agriculture sector continues to employ almost one-third of the workforce, most of the arable land is used to cultivate cotton, and Egypt must import about half of its food requirements. Unemployment in 1998 was reported at 20 percent, and the income disparity between the highest and lowest strata of society remains high. By contrast, unemployment in the United States in 1999 was just 4.2 percent.

Today, Egypt is primarily a free-market economy with some state control. Despite occasional outbreaks of political violence, it has a reasonably stable multiparty system and is strongly supported by the United States and the European Union. The economy's main exports are crude oil and petroleum products, cotton, textiles, metal products, and chemicals. Agriculture today accounts for 17 percent of GDP, industry for another 32 percent, while the services sector provides 51 percent.

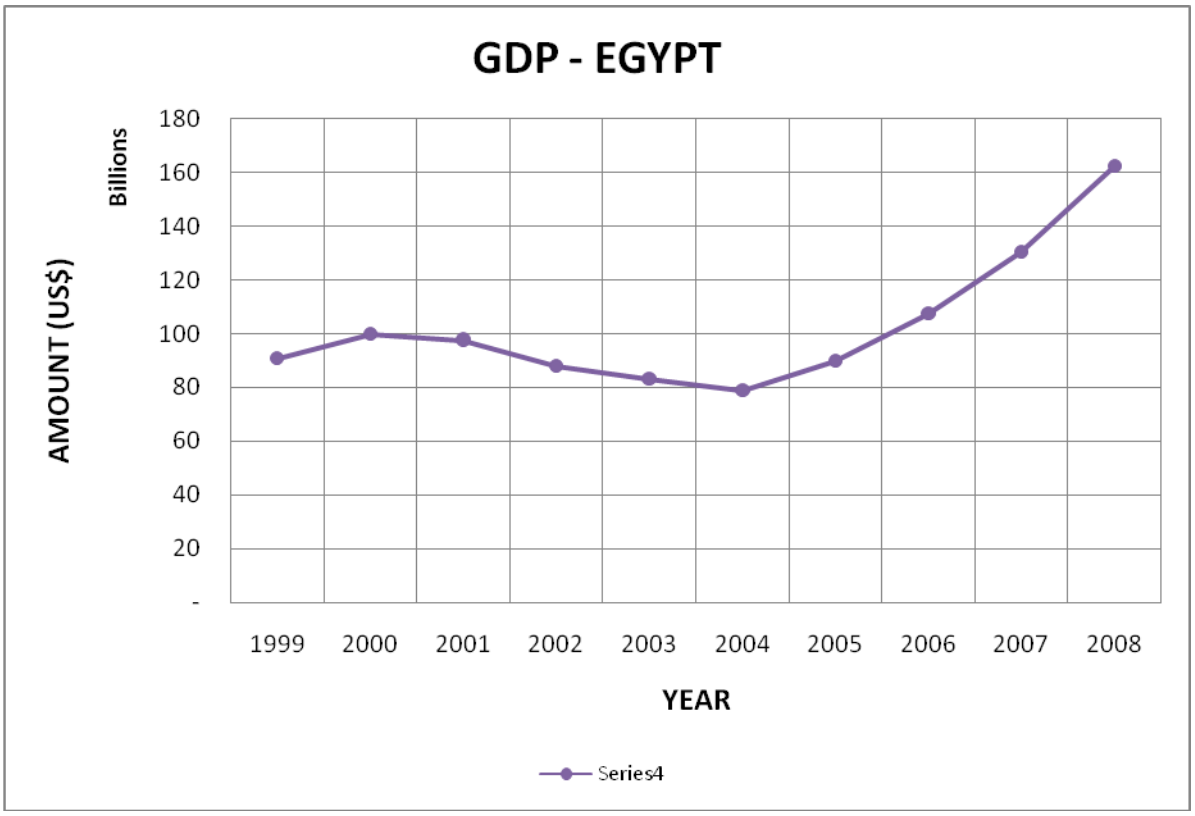
Until 2003, Egypt's economic structure was hostile to foreign investment. The economy suffered from high interest rates and tariff barriers. However, a series of economic reforms were introduced in 2005 to address these issues. With major tax cuts and trade tariff cuts, the economy was made more open to foreign direct investment (FDI). These proactive steps from the government helped to restore investor trust in the economy. FDI reached US$6 billion in 2006.

Cairo from 2004 to 2008 aggressively pursued economic reforms to attract foreign investment and facilitate GDP growth. The global financial crisis has slowed, but not stopped, the reform efforts. The international economic downturn slowed Egypt's GDP growth to 4.7% in 2009, predominately affecting export-oriented sectors, including manufacturing and tourism, and Suez Canal revenues. Growth in domestic sectors, including energy, transportation, telecommunications, retail trade, and construction kept economic growth from falling further in 2009.

According to the 2009 estimates, Egypt's export trade grossed over US$29 billion, a 22% surge from the previous year's level. Oil export is central to the Egyptian economy. Based on the 2007 figures, Egypt is the 55th largest oil exporting country. It exports 155,200 barrels per day, approximately. However, the country has huge oil reserves which can act as fuel for the economy for coming decades. Apart from crude oil and petroleum products, the country also exports metal products, cotton, textiles and chemicals.

EU and the US are the biggest exporting markets for Egyptian products. Italy has the largest share of the Egyptian export pie, accounting for 9% of the total volume. It is followed by the US, Spain, India, Syria, Germany and Saudi Arabia.

Figure 7: GDP-Egypt (1999-2008)



Source: CIA,World fact book.

The diagram above shows the trend of the Egyptian economy between 1999-2008, of particular interest is the dip in the economy between 2002-2005.This was caused by the lack of foreign investors due to the hostility of the economic structure of Egypt. However in 2005, the economy was made more open to

foreign direct investment (FDI), and this can be said to be the reason for the sharp growth experienced from 2005 upwards.

CHAPTER 4: RESULTS AND DISCUSSIONS

This chapter presents the main findings of the primary research. In order to achieve the purpose of this research, the finding and discussions will be deployed in three phases so as to get the explicit analysis. The phases are:

Phase 1: The trend of ISO 9001 certification take up in selected developing economies

Phase 2: The analysis of the relationship intensity on a ratio-type basis using the number of ISO certification per country and the GDP data.

Phase 3: The analysis of the relationship, if any between the levels of ISO certification take up and the economies of these selected countries.

4.1 ISO 9001 certififcation take-up trend in Nigeria, Kenya, Egypt, Mexico and China. (1999-2008)

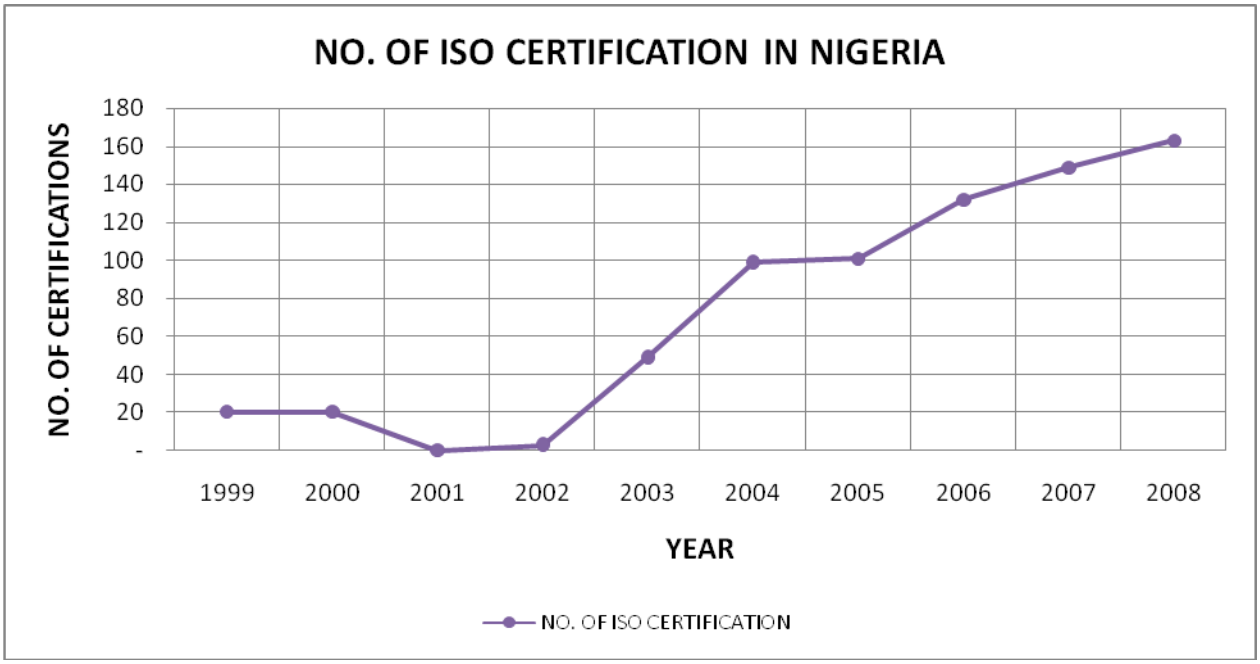
This particular section discusses and analysis the trend of ISO take up in the countries listed above with particular interest to the direction of the trend and it also tries to look at the reason for such direction.The number of ISO certification per country for a period of 10years (1999-2008) is looked into.
It should be noted that the graphs have been presented individually in order to make the slope for the individual graphs more pronounced as the graphs have different scalling due to large differences in the number of certification between the countries in view.

ISO does not itself issue certificates of conformity to ISO 9000, this is carried out independently of ISO by certification bodies in different countries.Currently,the Nigeria's representative accreditation body for ISO is the standards organization of Nigeria (SON),the kenyan Bureau of standars (KEBS) for kenya,Egyptian Organization for standardization and QC (EO) for

Egypt,Direccion Generalde Normas (DGN) for Mexico and finally,the Standardization Administration of China (SAC) for china.

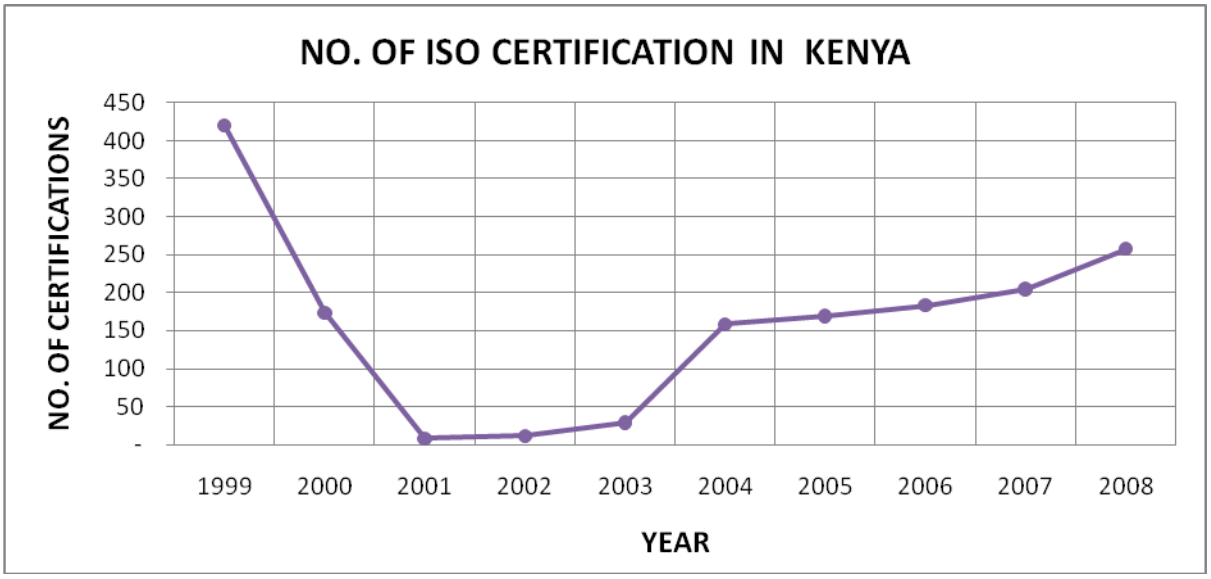
The number of certificates obtained by organizations in these countries over the past 10years(1999-2008) are presented in the diagram below for dissussions,comments and comparism.See appendix 2 for data.

Figure 8a: Number of ISO 9001 certification in Nigeria



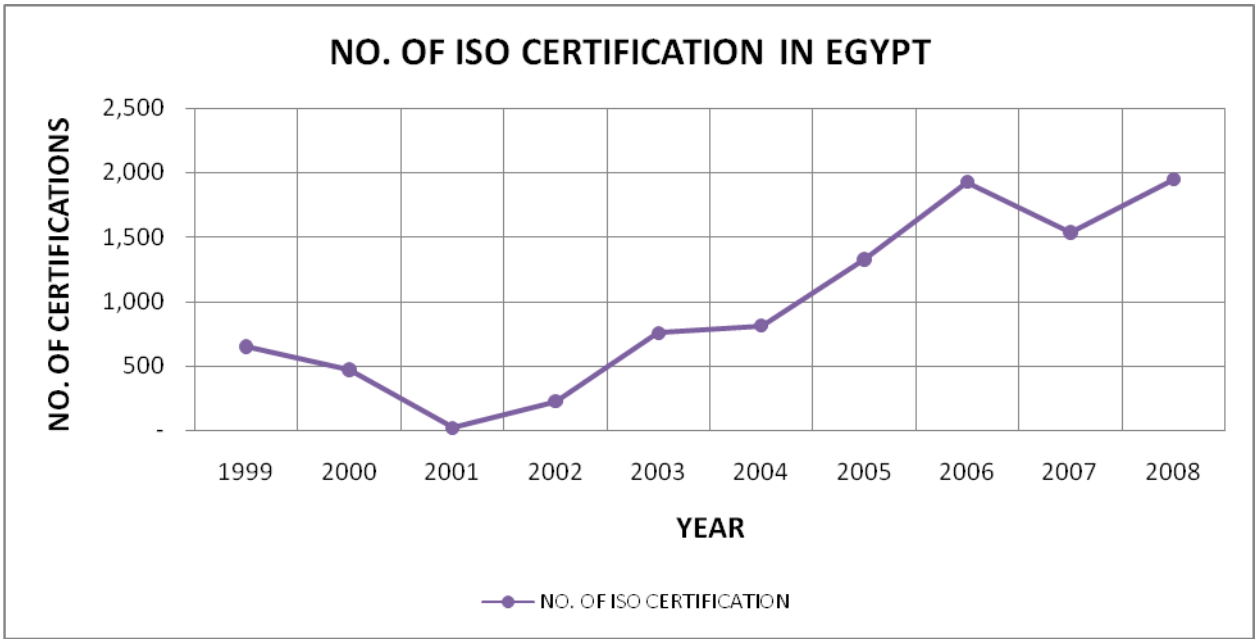
Source: ISO Survey of Certification (1999-2008)

Figure 10b: Number of ISO 9001 certification in Kenya



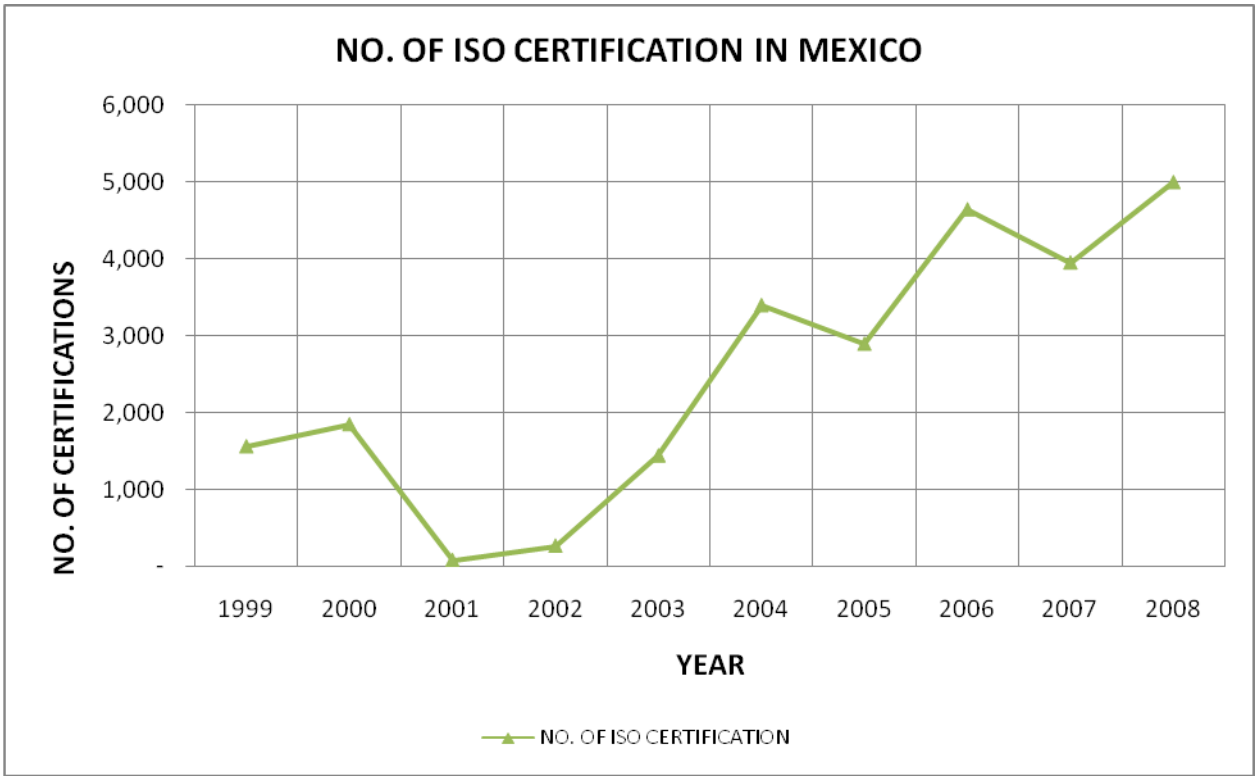
Source: ISO Survey of Certification (1999-2008)

Figure 10c: Number of ISO 9001 certification in Egypt



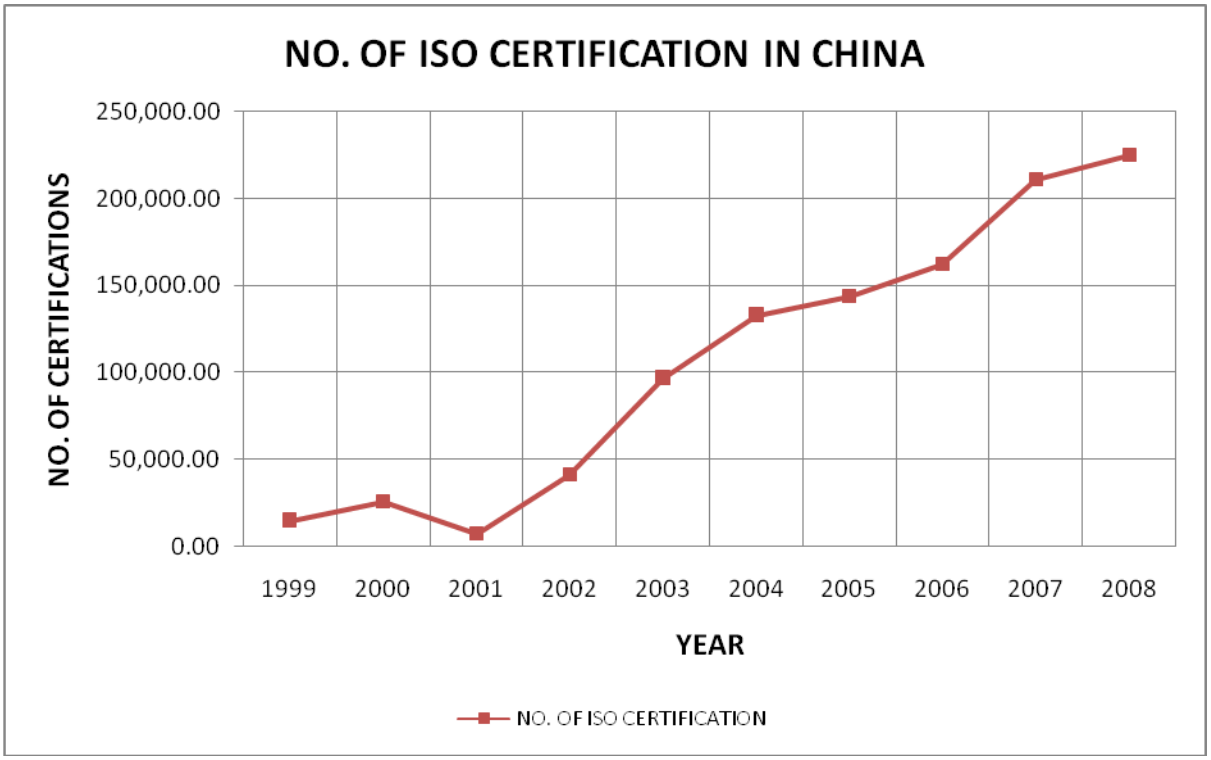
Source: ISO Survey of Certification (1999-2008)

Figure 10d: Number of ISO 9001 certification in Mexico



Source: ISO Survey of Certification (1999-2008)

Figure 10e: Number of ISO 9001 certification in China



Source: ISO Survey of Certification (1999-2008)

A historical review exposes the fact that the first Nigerian and kenyan's organization was accredited to an ISO 9000 standards in 1995,with just 1 organization each respectively(ISO survey,10th cycle).From there after,a continous and gradual increase of certification is observed.In fact,by the end of 2008,at least 163 Nigerian firms and 257 kenyan firms were registered to the revised ISO 9000:2000(ISO survey,2008).

As shown in figure 10a and 10b below,a rapid increase in certification took place in 2003. There was an increase from 3 certificates in 2002 to 49 in 2003 for Ngeria and 11 to 29 certificates from 2002 to 2003 for kenya, this can be supported by the fact that 2003 was the final change over date from the previous 1994version to the 2000 standards. It is still believed that the number of certifications in Nigeria is too low and not growing at the supposed rate because of lack of training and awareness on QMS like ISO and also because of lack of infrastructure to meet up to ISO standards(*XVII IMEKO World Congress).* Obviously, a lot needs to be done by the Nigerian government by encouraging

companies to be ISO certified through giving financial support and educating the companies on the need for a QMS such as ISO 9000 series

Furthemore,certifications by the first nine countries in Egypt, first took place in 1994 and ever since it has also experienced a continous and fast increase in the number of organization getting the certifications.From figure 10c,we can see that by the end of 2008 as many as 1,944 certificates were obtained by Egyptian organization.This is indeed very impressive and the reason is not farfetched. According to Magd,(2006),the Egyptian government and the business community have placed a greater emphasis on achieving superior quality in order to compete in both domestic and foreign markets through a quality assurance system (ISO 9001:2000),hence the reason for the continuous increase in the number of certifications in Egypt.
It should be noted that the reason for the dip in certification between 2001-2003 for Egypt as seen in figure 10c above, is the same as discussed for the Nigeria and Egyptian dip.

Again,taking a look at figure 10d and 10e,which shows the ISO certification trend in Mexico and China respectively,we can see that for china,there was an explosive growth in the number of certification beetween 1999 and 2008,that is from 15,109 to 224,616 which is an increase of about 94%.This tremendous level of increase in the number of certification is because China is fast becoming a highly industrialized nation with so many companies and organizations especially from the western world outsourcing their production activities. Hence, due to customer specification for quality, certification is obtained to prove their quality standards. As at 2008, ISO survey of certification, china has the highest number of certification in the world and is still rising.

For México, the number of ISO certification has also been on the rise in the last 10 years. In figure 10e, we see that the number of certification has increased by almost 63% between 1999 and 2008.The reason for this increase can be argued to be the increased level of trading activities between the United states and México due to the trade liberalization policy in 1994 and also, because most multinational car manufacturing companies have their hub in México, hence the increase in certification.

4.2 The relationship intensity on a ratio-type basis using the number of ISO certification per country and the GDP data.

This particular section is the phase two of the findings and discussions chapter and it looks at what is called "ISO intensity" for the purpose of this research. The ISO intensity is calculated against the nominal number of certification so as to give a better understanding on the degree of intensity, that is, how much of the GDP of an economy does 1 ISO 9001 certification represent. This was done by dividing GDP per country by the number of ISO certifications for different years (see appendix for the table of ratio result).The ratio results derived is used to plot the Intensity graph for the five countries examined between 1999-2000.The ISO intensity data table and graphs are shown below followed by a detailed analysis.

Table 5: GDP/ISO intensity data

	GDP/ISO CERTIFICATION RATIO DATA				
COUNTRY	**1999**	**2000**	**2001**	**2002**	**2003**
CHINA	71,697,664	46,711,619	178,713,072	35,461,863	16,966,965
MEXICO	309,255,784	315,478,025	7,874,594,937	2,449,343,396	487,352,122
NIGERIA	1,738,802,010	2,299,180,016	0	19,705,615,940	1,380,735,170
KENYA	30,778,163	73,359,994	1,623,314,982	1,195,387,582	513,918,429
EGYPT	139,769,960	213,330,216	5,424,000,447	395,723,786	109,978,356

COUNTRY	**2004**	**2005**	**2006**	**2007**	**2008**
CHINA	14,531,694	15,546,262	16,380,478	16,046,932	19,263,988
MEXICO	223,952,226	293,076,125	204,673,210	259,204,257	218,062,124
NIGERIA	887,327,480	1,111,376,238	1,112,628,788	1,113,563,758	1,270,662,577
KENYA	101,874,112	110,875,281	122,963,060	132,962,719	118,111,871
EGYPT	97,339,735	67,636,293	55,748,981	84,998,628	83,478,666

Figure 11a: GDP/ISO 9001 intensity ratio for Nigeria

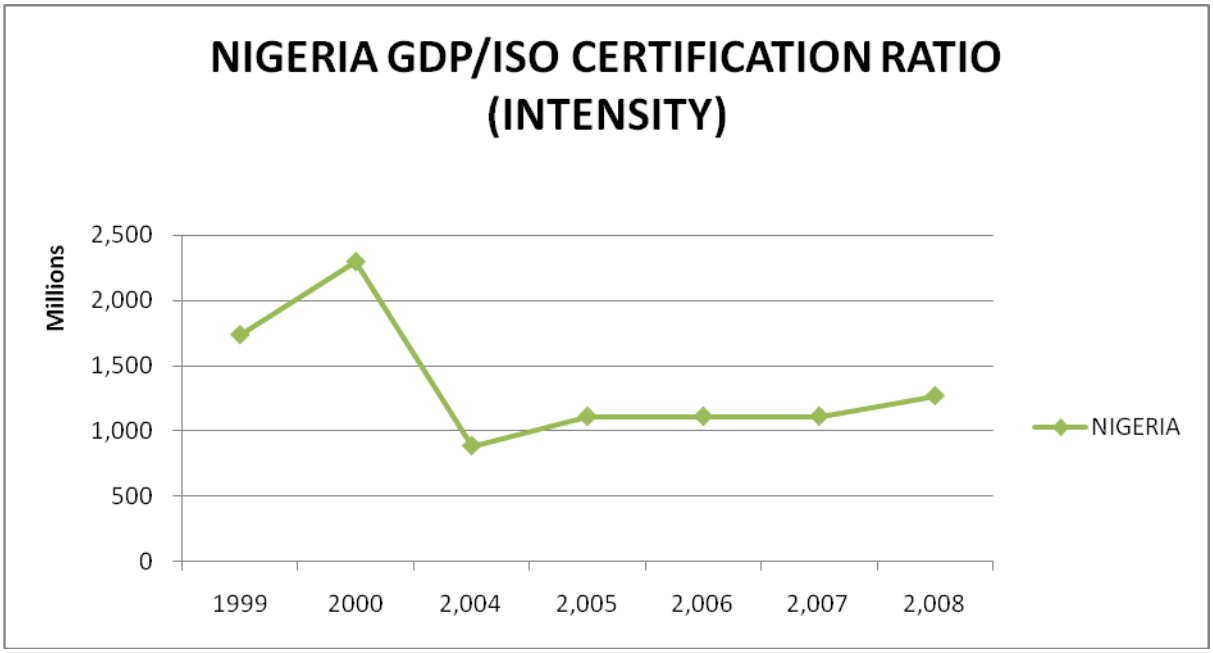


Figure 11b: GDP/ISO 9001 intensity ratio for Kenya

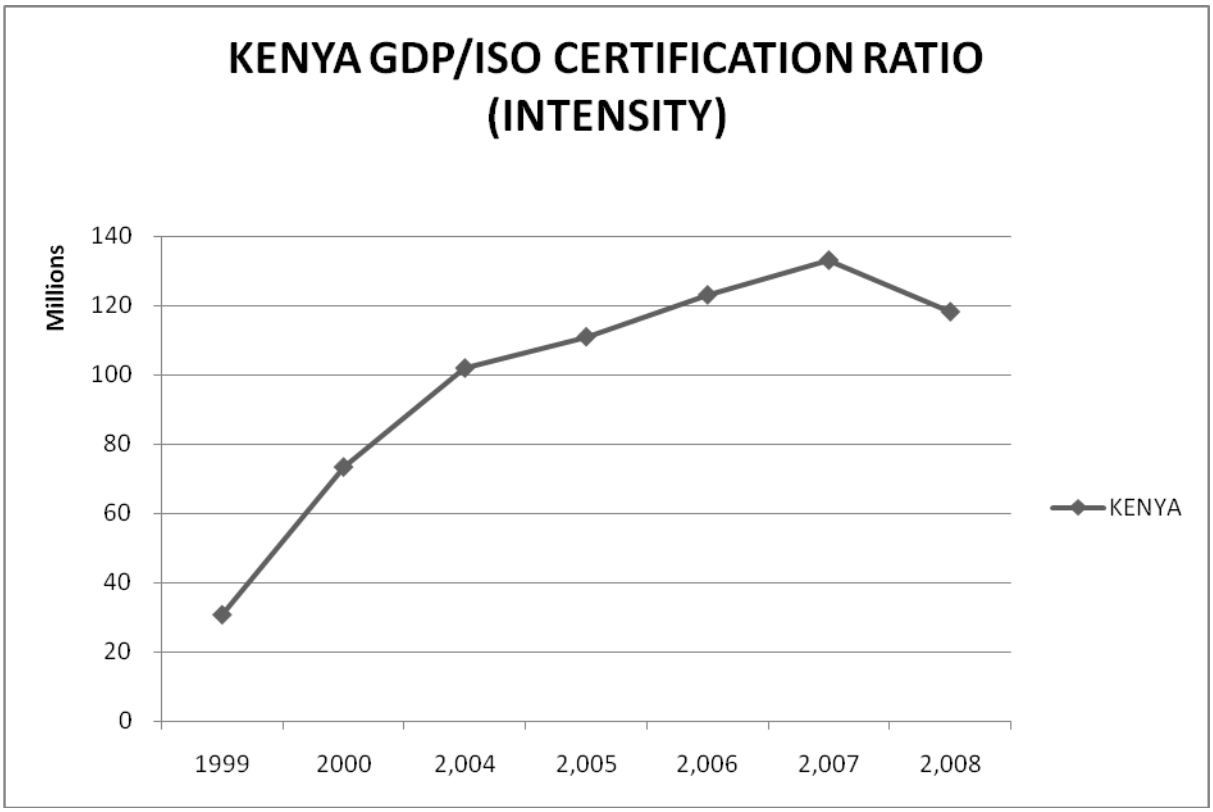


Figure 11c: GDP/ISO 9001 intensity ratio for Egypt

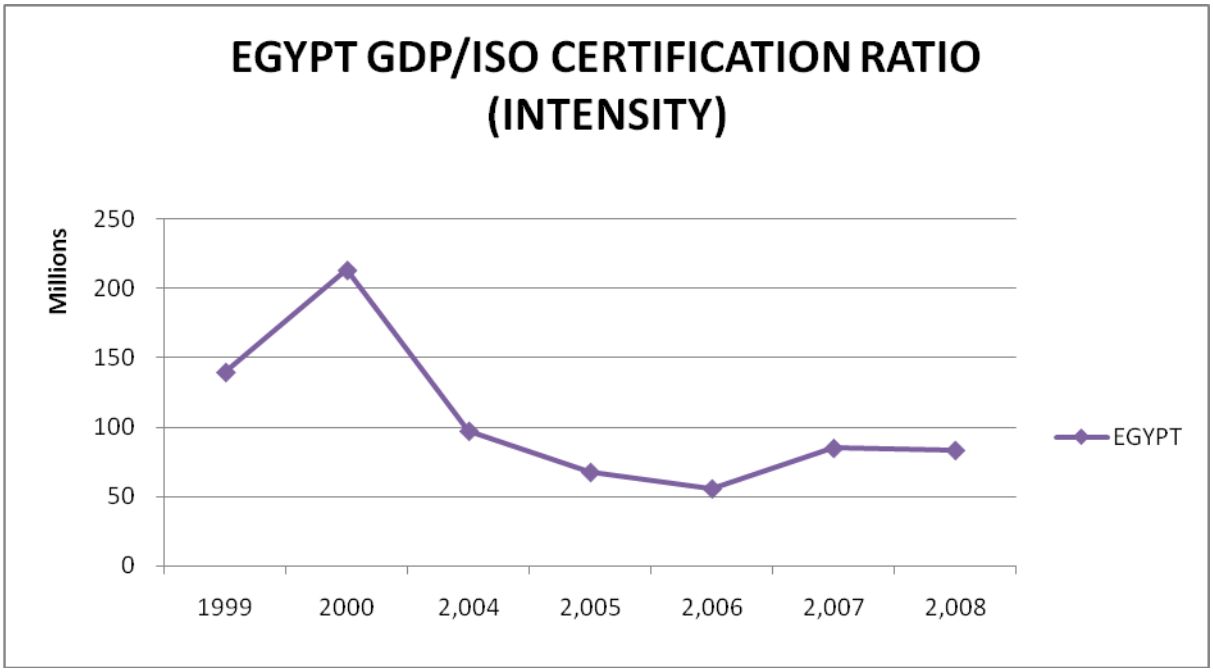


Figure 11d: GDP/ISO 9001 intensity ratio for China

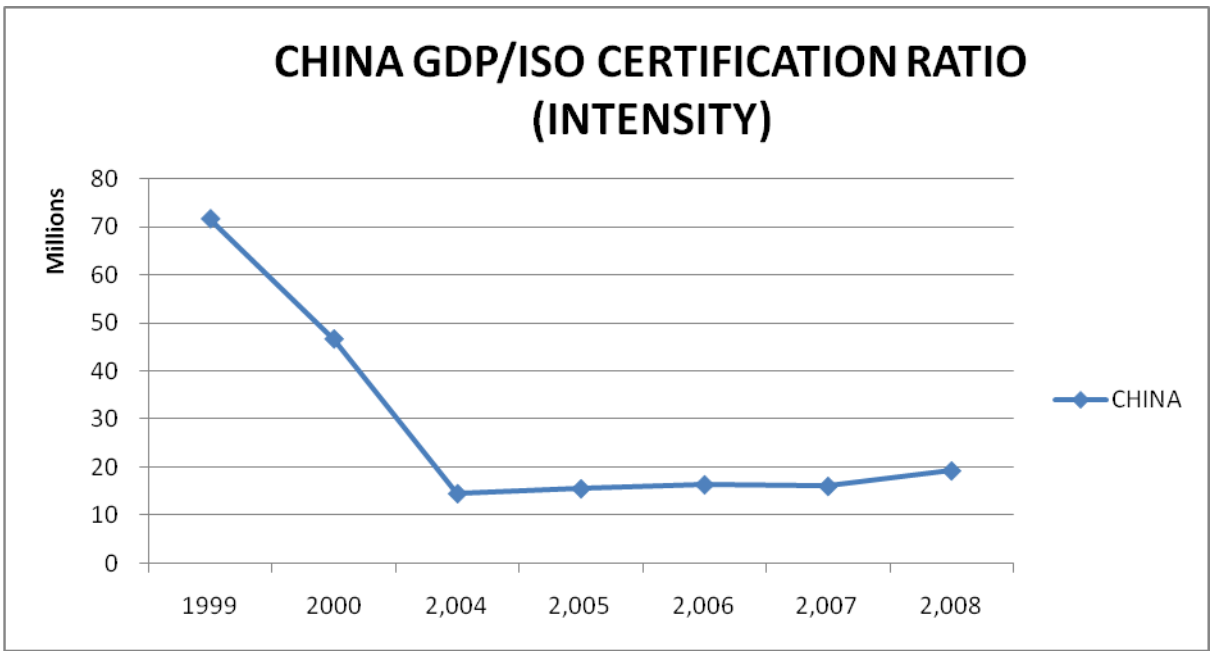


Figure 11e: GDP/ISO 9001 intensity ratio for Mexico

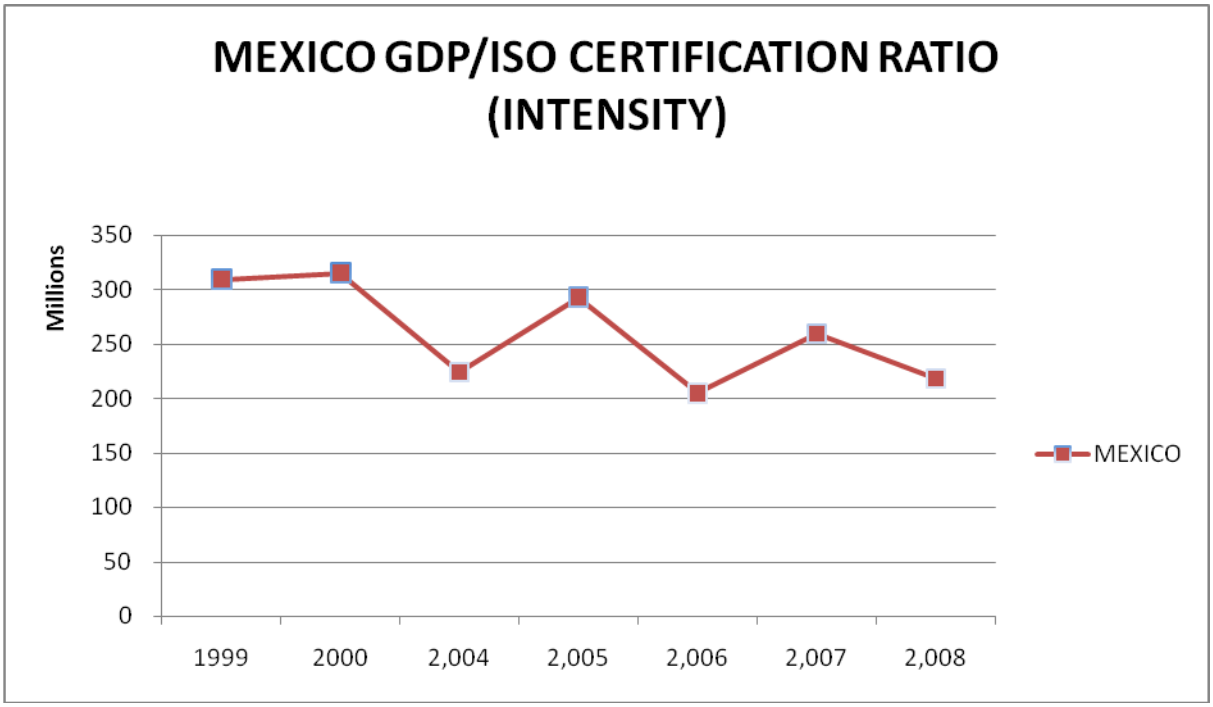


Figure 11a to 11e above is the graphical representation of the intensity data presented in the table above. Data between 2001-2003 have been deliberately omitted in order not to distort my graphs as it is believed it does not give true figures of certification of the survey of certificates between 2001 and 2003 because this period was characterised by the changeover from the different series of ISO 9000 into just one called ISO 9000:2000.Hence, those organization who were using the older versions of the certification were not counted in some countries whilst some were counted.

As seen from the GDP/ISO certification table, taking an example from China in the year 2008, it can be interpreted as ratio 1: 19,263,988 which means 1 unit ISO certification represents $19,263,988 of china's economy. This simply means that china's level of ISO certification is keeping up with its economy, this can be as a direct result of foreign direct investment in form of outsourcing by western countries which forces Chinese companies to take up certification as a proof of competency.

For Kenya in 2008, the ratio as seen from the intensity table above is 1:118,111,871 which means for every 1unit of ISO certification represents $118,111,871 of Kenya's GDP.Kenya is not doing well in terms of getting the ISO 9001 certification. This is a bit strange as Kenya is said to be one of the fastest growing economies in the world according to Kenya's economic update report and one major reason for this low number of certification may be the fact that the government is not sensitizing the SMEs to get a QMS certification or it may be that Kenya's accreditation policy might be too hostile towards consultants who would have encouraged certification. It can therefore be concluded that Kenya's GDP has outgrown its number of ISO 9001 certification.

Furthermore, Nigeria's intensity ratio in terms of ISO certification to GDP in 2008 was 1: 1,270,662,577.This can again be interpreted to mean that for every 1 unit of ISO certification, GDP is 1,270,662,577 .For such a country with a large economy, one would expect a far higher level of ISO certification but as seen by figure 11a, the number of ISO certification has remained at almost the same level for the past five years. One major reason for such a trend in the case of Nigeria may be the fact that only one sector of their economy, that is, oil and gas is mainly responsible for their GDP growth, hence most certifications only come from this sector. In conclusion, Nigeria's economy is not keeping up with its ISO certification.

For Egypt, it has seen a great increase in its number of ISO certification between 2004-2008 and that explains the reason why the GDP/ISO intensity is relatively strong. From the table above, the ratio of the intensity in 2008 is 1: 83, 478, 666, which simply means that 1 unit of ISO 9001 certificate represents $83,478,666 of Egypt's GDP.This is a relatively strong intensity and the reason may be the fact the Egyptian government and the business community have placed a greater emphasis on achieving superior quality in order to compete in both domestic and foreign markets, and as a result promoted the need for certification.

Finally, the ratio intensity analysis for Mexico shows that ISO certification take-up is keeping up with its GDP. From the intensity data table above, the ratio of ISO to GDP in 2008 is 1:218,062,124.This means that for every 1 unit of ISO

certification obtained, GDP is 218,062,124.A look at figure11e shows that Mexico in terms of economic growth is keeping up with its level of ISO certification.

4.3 The analysis of the relationship, if any between the levels of ISO certification take up and the economies of these selected countries.

This section, which is the third phase of chapter 4 looks at the regression analysis of our ISO intensity data with the aim of finding a possible relationship between a country's economic development and its ISO 9001 certification status.

Using the Pearson's technique, a simple linear regression was performed using excel in order to get the correlation coefficient (r) and the coefficient of determination(r^2). The correlation coefficient indicates whether there is a relationship and to what degree, between the two variables, and whether the relationship is a positive or a negative number. Whilst the coefficient of determination tells us what proportion of the variation between the data points is explained or accounted for by the best fit line fitted to the points. It indicates how close the points are to the line.

A best-fit line was also drawn to show the trend of the relationship. It should be noted that before drawing a best-fit line, a scatter plot is first drawn as this allows us to visually inspect the data prior to running a regression analysis. Often this step allows us to see if the relationship between the two variables is increasing or decreasing and gives only a rough idea of the relationship.

Below is the result of the regression analysis showing the coefficient correlation, the coefficient of determination and the best fit lines for all the five countries studied in this dissertation. These graphs are first presented and then discussions follow. The data used were gathered over a period of 10years, (1999-2008)

Figure 12a: Regression result for Nigeria.

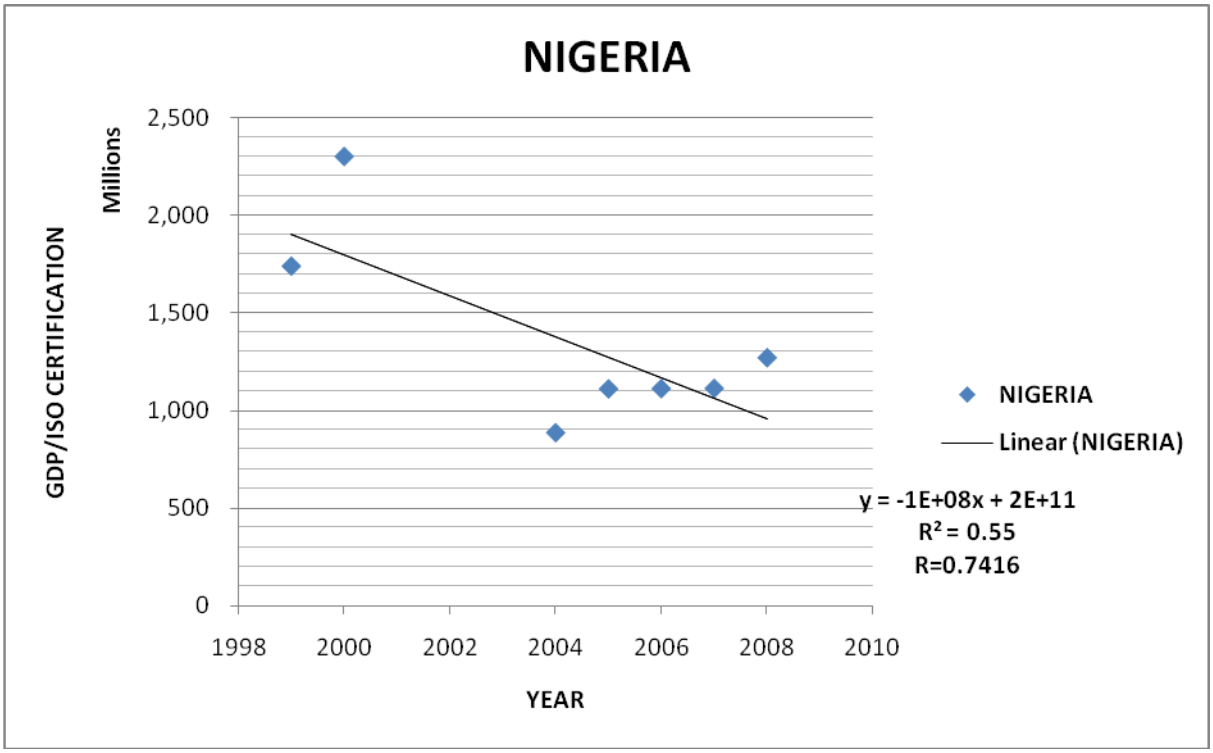


Figure 12b: Regression result for Kenya.

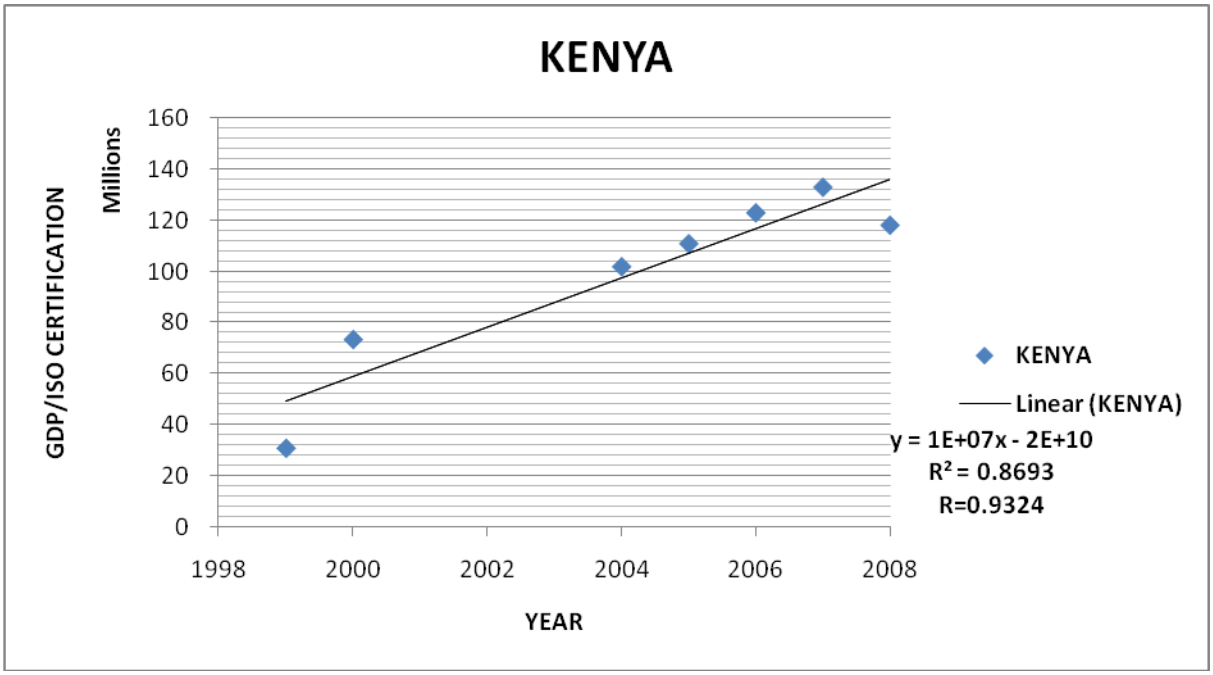


Figure 12c: Regression result for Egypt.

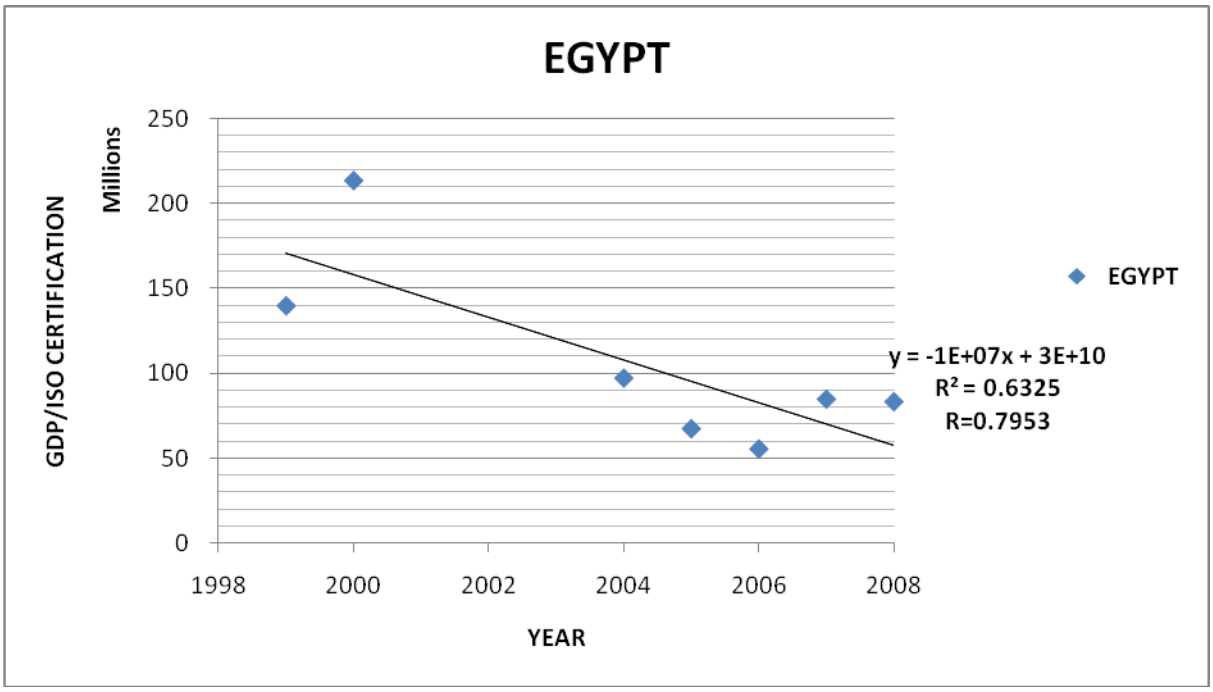


Figure 12d: Regression result for China

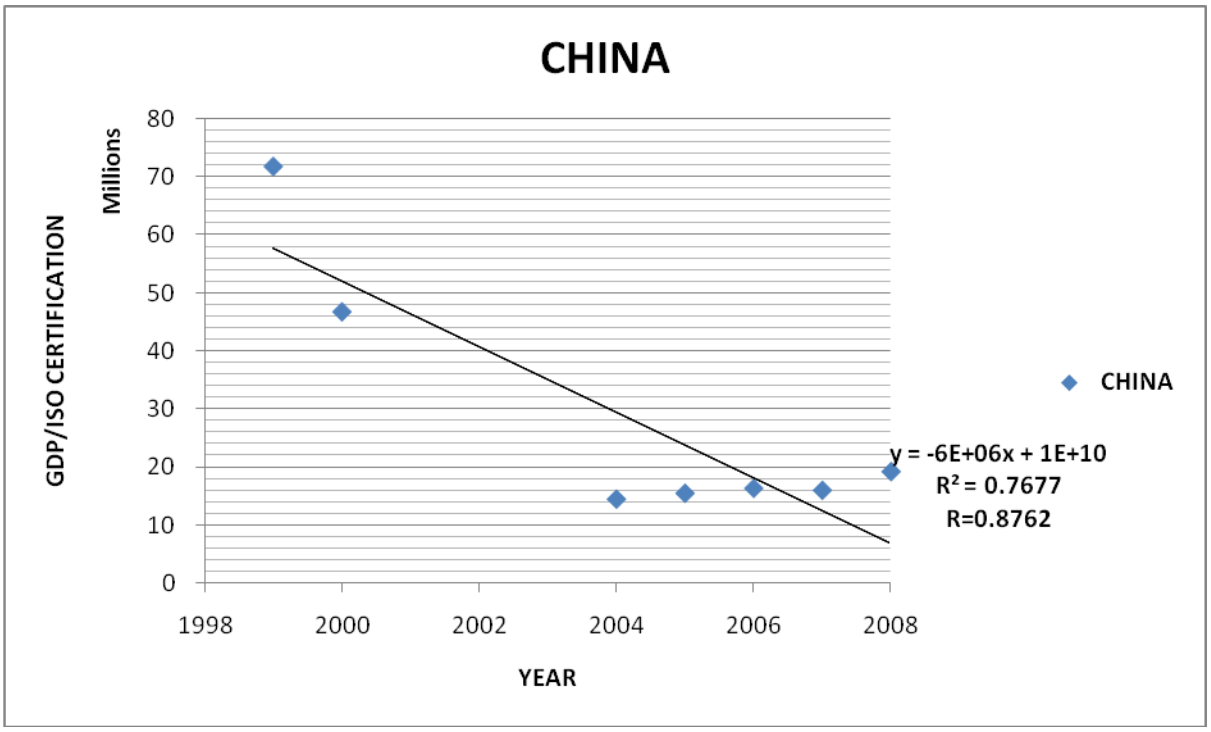
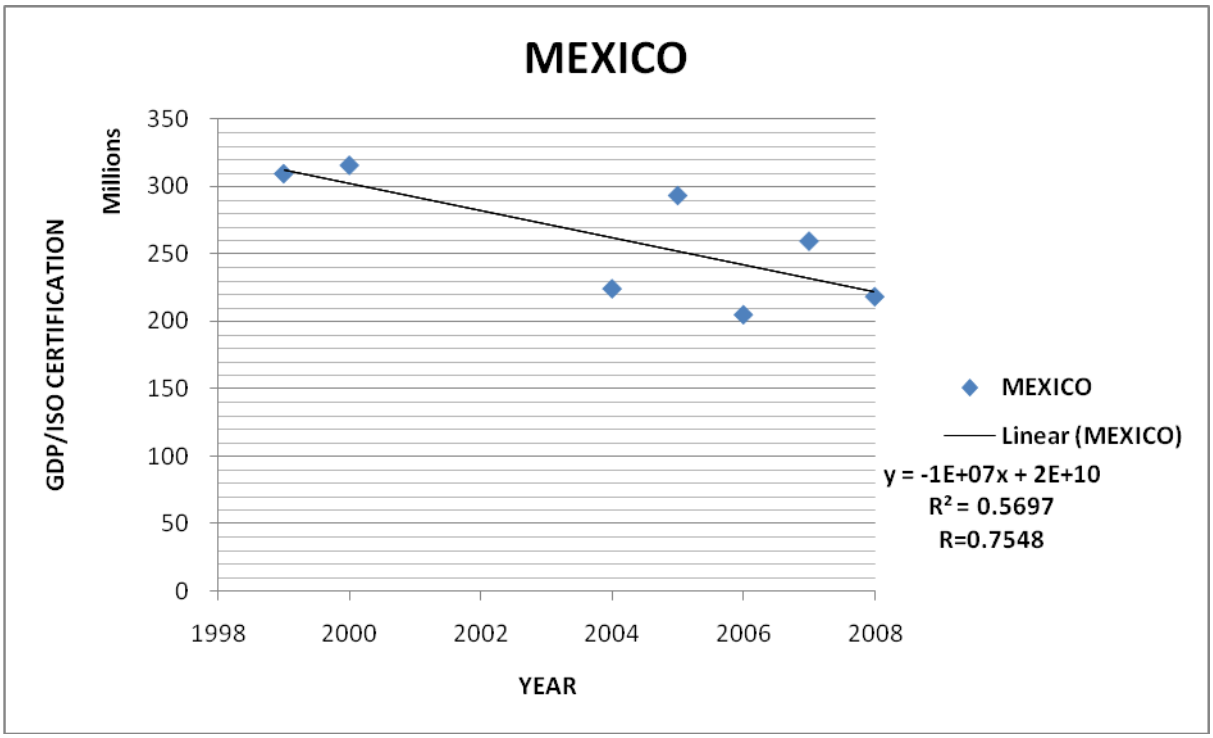


Figure 12e: Regression result for Mexico



4.3.1 Analysis and Interpretation of results

Figure 12a above, shows the regression result for Nigeria. It should be noted that the data between 2001-2003 were deliberately omitted as these data are believe to be less accurate due to loss of some ISO data which was caused by the transition from the previous ISO standards to that of 2000 series.

From the graph above, it can be seen that the trend of the relationship between GDP and number of ISO certification is a linear one as shown by the best fit line. The coefficient of correlation (r) was 0.7416 whilst (r^2) was 0.55.From (r), it simply means that there exist a fairly strong relationship between GDP and number of ISO certification take up in Nigeria and (r^2) can be interpreted to be that 55% of the total variation in y which is our regression function is related whilst the other 45% remains unexplained.

One thing to be noted is that the average R^2 of .55 is thought to have been caused by the fluctuations in the GDP/ISO intensity result which though follows a particular trend, is still scattered along the best fit line as seen from the graph above. This ups and down is often synonymous with countries whose economy is

largely dependent on only one sector of the economy as the case is in Nigeria, which is largely dependent on crude oil.
It can therefore be concluded the number of ISO certification is keeping with the GDP of Nigeria, though at a slow pace.

Furthermore, figure 12b shows the regression result for Kenya and we can see that there is a linear and positive relationship between GDP and number of ISO 9001 certification in Kenya. The correlation coefficient (r) is 0.9324 whilst r^2 is 0.8693, therefore we can say that there exist a very strong relationship between our x and y variables, and r^2 shows that almost 87% of the total variation in our y function is related whilst the other 13% remains unexplained.
The Kenya graph shows a positive upward trend which may be interpreted to be that the GDP of Kenya has outgrown the number of ISO certificates. Although the Kenyan economy is one of the fastest growing economies in Africa, the number of certification is been outgrown by the GDP.The reason for this may be due to the fact that the Kenyan government has not done enough to sensitise the local SME's to get certification and also, the government policies regarding foreign QMS consultants may not be favourable.
In the case of Kenya, we can conclude that there is definitely a positive relationship between its GDP and it ISO certification take-up.

Likewise, figure 12c shows the result of the regression analysis for Egypt with r=0.7953 and r^2=0.6325, and has a result, there is a fairly strong correlation between the economies of Egypt and the ISO certification take up. The coefficient of determination explains that 63% of the total variation is related whilst 37% remains unexplained.
There is definitely a fairly strong relationship between GDP and ISO certification take up in Egypt but it is working at keeping up with the pace as there is a strong sensitization by the Egyptian government to encourage increased QMS certification.

Finally figures 12d and 12e show the regression result for China and Mexico simultaneously and as seen by these graphs above, there is a linear relationship between the GDP and ISO certification take up of these two economies.

For china, (r) is 0.8762 which shows that there is such a strong relationship between GDP and ISO certification take up and its r^2 which is 0.7677 can be interpreted to be that almost 77% of the total variation is related whilst the other 23% remains unexplained.
As for Mexico, (r) is 0.7548 which shows that the degree of relationship is fairly strong between GDP and ISO take up whilst r^2 is 0.5697 and can be interpreted to be that 56% of the total variation in y is related whist the remaining 44% is unexplained.

4.4 Summary

It was discovered in the phase one of this chapter that the numbers of ISO certification in all the countries in discussion have grown through the past 10 years in review. For some countries such as china and México, the rates of certification has increase tremendously over the last 10 years because of increased foreign direct investment in china and increase US activities with Mexico. Whilst for countries such as Nigeria and Kenya, though number of certification has increased, but at a slow pace. Egypt has remained fairly balanced in terms of number of certification.

In the phase two and three of this chapter, it is evident that there is definitely a correlation between the GDP of the countries in discussion and their ISO 9001 certification take-up

Finally, as a rule of thumb, it should be noted that just because two variables are correlated, does not mean that one of the variables is the cause of the other. It could be the case, but it does not necessarily follow

CHAPTER 5: RECOMMENDATIONS AND CONCLUSIONS

In today's globalised business world, quality assurance emerges as one of the leading themes in organizations and economies who are in pursuit of global competitiveness. As a result, a wide range of systems for managing quality have been developed during the last few decades. Among them, the most prestigious and widely implemented Quality Management Systems is said to be the ISO 9000 series of standards.

Within the last 10 years, there has been a remarkable increase in the number of certifications issued by International organizations of standardization to developing and transiting economies. This increase in certification, gives developing countries the opportunity to compete in global market place as being ISO 9000 certified is seen as an entry qualifier into the global market place.

The increased ISO certification in developing economies has drawn my attention into willing to study five developing countries, namely, Nigeria, Kenya, Egypt, China and Mexico. This study is to observe the trend of their ISO 9001 certification pick up, the relationship between the economy of these countries and their ISO certification pick up, if any and also the advantages and disadvantages of ISO certification to developing economies.

Based on the findings of my study, implementing ISO standards in developing countries brings advantages such as providing internationally accepted specifications that can be applied to the development, manufacturing and marketing of local goods and services, thus raising the country's ability to compete on export markets worldwide.Also,waste of countries resources are avoided and state-of-the-art technological know-how is transferred.

Moreso, from this study, which employed mostly a quantitative technique by carrying out a regression analysis using Pearson's correlation technique, it was discovered that there is a strong correlation between the economies of all the countries in review in terms of GDP and their ISO certification take up. By calculating the GDP/ISO intensity ratio for these five countries, it was discovered that countries such as China, Mexico and Egypt's economy are actually keeping up to their level of ISO certification take up whilst Nigeria is

way behind and not keeping up. Of particular interest is the intensity result obtained for Kenya, it shows that the economy in terms of GDP has outgrown the level of ISO certification.

Since in the course of this study, it has been proven that there is a relationship between the level of economic growth of developing countries and their ISO 9001 certification take up, I therefore recommend that policy makers and government of various developing countries should sensitise and encourage the take up of ISO 9001 certifications in order to be able to compete in the global village. Also the dissemination of the results of this study will enable other developing countries to understand the benefits achieved from implementing ISO 9001:2000 in terms of economic growth.

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Appendix 1

The following is a clause-by-clause overview of the exact changes:

0.1 - General
The standard provides the ability to meet any statutory requirements along with regulatory requirements.
It's also clarified that these requirements are restricted to those which are applicable to the product.

0.2 – Process approach Text added to identify a process as "an activity or set of activities."

0.3 - Relationship with ISO 9004 Revised to emphasize continual improvement. Specifies that ISO 9004 can be used "to move beyond the requirements of ISO 9001."

0.4 - Compatibility with other management systems Added reference to Annex A, which compares ISO 9001:2008 and ISO 14001:2004.

1.1 and 1.2 - Scope
First note clarifies that the term product can be any intended output from the product realization process.
Second note explains that a statutory requirement can also be a legal requirement.

2 - Normative references Clarification for current reference - the ISO 9000:2000 is now replaced by ISO 9000:2005.

3 - Terms and definitions Explanation of "customer," "organization" and "supplier" terms have been removed.

4.1 - General requirements Clause a - The word "determine" replaces the word "identify" for processes.Notes cover definition of outsourced process and types of control that may be applied to these processes. Reference to clause 7.4 has been added.

4.2.1 – Documentation requirements, general Clarification that QMS documentation also includes records. Note 1 was changed - a single document may address the requirements for one or more procedures, and a requirement for a documented procedure may be covered by more than one document.

4.2.3 (f) - Control of documents Clarification that only external documents determined by the organization to be necessary for the planning and operation of the QMS need to be identified and have their distribution controlled.

4.2.4 - Control of records Editorial changes to better align with ISO 14001.

5.5.2 - Management representative Additional clarification that the management representative be a member of the organization’s management.

6.2.2 - Competence, training and awareness Clause b – "provide training or take other actions to satisfy these needs" changed to "where applicable, provide training or take other action to achieve the necessary competence"

6.3 - Infrastructure Clause c – Clarification that "information systems" are included as part of the infrastructure.

6.4 - Work environment Clarification of "work environment" to include conditions under which work is performed. These conditions include noise, temperature, humidity, lighting, and weather as part of the working environment.

7.1 (c) - Planning of product realization The term "measurement" had been added to the activities.

7.2.1 - Determination of requirements related to the product Note includes clarification of the meaning of "post delivery activities."

7.3.1 - Design and development planning A note has been added clarifying that design and development review, verification and validation have distinct purposes. However, they can be conducted and recorded separately or in any combination, as suitable for the product and the organization.

7.3.3 - Design and development outputs Note added to clarify that information needed for production and service provision may include details for preservation of the product.

7.5.3 - Identification and traceability Added/clarified that the organization shall identify product status with respect to monitoring and measuring requirements throughout product realization.

7.5.4 - Customer property Slight wording change in the requirement to inform the customer of any problem regarding his property. The note has been amended to specify that personal data is "customer property."

7.5.5 - Preservation of product Slight wording changes:
– Added "in order to maintain conformity to requirements."
– Addition of the term "As applicable," preservation shall include …

7.6 - Control of monitoring and measuring equipment7.6 has changed from monitoring and measuring “devices” to “equipment”.
The reference to paragraph 7.2.1 has been removed.
Clause a – Changed "and/or" to "or," so it now reads "be calibrated or verified, or both."
Clause c – from "be identified to enable the" to "have identification in order to".
Note 1 – the references to ISO 10012-1 and ISO 10012-2 have been removed.
Note added – Confirmation of the ability of computer software to satisfy the intended application would typically include its verification and configuration management to maintain its suitability for use.

8.2.1 - Customer satisfaction Note added to explain that monitoring of customer perception can include input from sources such as customer satisfaction surveys, customer data on delivered product quality, user opinion

surveys, lost business analysis, compliments, warranty claims, and dealer reports.

8.2.2 - Internal audit The management responsible for the area being audited shall ensure that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes. Records of audits include audit results.
The references to ISO 10011-1, ISO 10011-2, and ISO 10011-3 are now changed to ISO 19011.

8.2.3 - Monitoring and measurement of processes A change of words: "to ensure conformity of the product" was removed at the end of the last sentence. Note added: "When determining suitable methods, it is advisable that the organization should consider the type and extent of monitoring or measurement appropriate to each of its processes in relation to their impact on the conformity to product requirements and on the effectiveness of the quality management system."

8.3 - Control of nonconforming product Editorial changes only – rearrangement of the paragraphs.

8.4 - Analysis of data References to other clauses updated in items b), c), and d).

8.5.2 - Corrective action Item f) updated to read "reviewing the effectiveness of the corrective action taken."

8.5.3 - Preventive action Item e) updated to read "reviewing the effectiveness of the preventative action taken."

Appendix2:Number of ISO certification per country between 1999-2008

	Nigeria	Kenya	Egypt	China	Mexico
1999	20	419	649	15109	1556
2000	20	173	468	25657	1843
2001	0	8	18	7413	79
2002	3	11	222	40997	265
2003	49	29	754	96715	1437
2004	99	158	810	132926	3391
2005	101	169	1326	143823	2890
2006	132	183	1928	162259	4636
2007	149	204	1535	210773	3946
2008	163	257	1944	224616	4990

Appendix 3:GDP per country between 1999-2003

	1999	2000	2001	2002	2003
Nigeria	34,776,040,200.	45,983,600,313.	622,093,000,000.	649,076,000,000.	700,325,000,000.
Kenya	12,896,050,252.	12,691,278,914.	12,986,519,857.	13,149,263,399.	14,903,634,448.
Egypt	90,710,703,939	99,838,540,997	97,632,008,051	87,850,680,573	82,923,680,622
China	1,083,280,000,000.	1,198,480,000,000.	1,324,800,000,000.	1,453,830,000,000	1,640,960,000,000
Mexico	481,202,000,000.	581,426,000,000.	622,093,000,000.	649,076,000,000.	700,325,000,000.

GDP per country between 2004-2008

	2004	2005	2006	2007	2008
Nigeria	87,845,420,492.	112,249,000,000	146,867,000,000.	165,921,000,000.	207,118,000,000.
Kenya	16,096,109,637.	18,737,922,545.	22,502,239,913.	27,124,394,664.	30,354,750,901.
Egypt	78,845,185,709	89,685,724,889	107,484,034,648	130,472,894,495	162,282,527,273
China	1,931,640,000,000.	2,235,910,000,000	2,657,880,000,000.	3,382,260,000,000	4,327,000,000,000.
Mexico	759,422,000,000.00	846,990,000,000.	948,865,000,000.00	1,022,820,000,000	1,088,130,000,000.